USER'S GUIDE

digidesign

DIGIDESIGN SESSION 8 ™
USER'S GUIDE

PC Version 2.0
for
882 Studio Audio Interface

digidesign

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2. Digidesign hardware configuration
3. Hard disk model and mechanism

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Chapter A
An Introduction to Digidesign Session 8

An Introduction to Digidesign Session 8

A

Introduction

Welcome to Digidesign Session 8™, the integrated digital studio for professional-quality personal recording. Digidesign Session 8 represents a major breakthrough in personal recording because it brings together, under the intelligent control of a PC-compatible computer, virtually all of today's key recording technologies: direct-to-disk digital multitrack recording, random-access editing, digital mixing, and MIDI sequencer integration. This powerful combination of technologies provides you with the means to digitally compose, record, mix, and master professional-quality recordings in your own personal studio.

Your Session 8 system consists of the following:

- The *Session 8 software*, your "window" into your studio
- The *Session 8 "882 Studio" Audio Interface*, a high-fidelity input/output device for passing audio between your Session 8 system to the rest of your studio
- The *Session 8 DSP/SCSI* card, a digital signal processing (DSP) card which installs in your computer and gives your system its audio processing power and a high-speed interface to large external SCSI hard drives
- The *Audio Interface I/O card*, a second plug-in card which connects to the Session 8's Audio Interface and allows you to bring audio data into and out of the system

The Session 8 was designed to easily integrate into any studio setup—whether you already have a mixing console or wish to take advantage of Session 8's built-in internal digital mixing capabilities. With the Session 8, you can record, edit, and mix audio entirely in the digital domain, and produce music that rivals recordings done in professional recording facilities.

Here's what Session 8 offers:

Recording

Up to eight tracks can be recorded at once, or individual parts can be overdubbed in succession. Session 8's digital audio processing power also makes unlimited track-bouncing possible, without any signal degradation.

Editing

The Session 8's digital editing capability represents a powerful new way of working with music and sound. Session 8 provides extensive audio editing tools for the visual manipulation of your recorded tracks. These editing tools give you nearly unlimited flexibility in assembling, editing, and rearranging your final recordings.

Mixing

Session 8 provides an on-screen mixing console, complete with parametric EQ, effect sends and fader grouping. With your external effects units connected to your Session 8 882 Studio Audio Interface, final mixdown can take place in the digital domain, for maximum fidelity. Session 8's Audio Interface also offers 8 individual output channels, allowing you to use it strictly as a digital multitrack recorder connected to your existing mixing board.

Mixer controls can be automated by using a Windows-compatible MIDI sequencer. For a "hand's-on" approach, the Digidesign's optional R1 controller provides a control surface with faders and buttons for all major mixing and recording tasks.

New Features in Version 2.0

Version 2.0 of Session 8 has several new features and enhancements, including:

- A Strip Silence command
- Naming of up to 100 markers
- Support for the Digidesign ADAT Interface, and 8-channel back up to an ADAT multitrack digital tape recorder.
- The ability to create silence based on highlighted selection (the *Silence Region* command)
- Scroll after playback

- Cut selection capability
- Selection to grid capability
- The ability to audition audio from the Regions List
- Grid to locators
- Grid to Time Code
- Support for the Digidesign SMPTE Slave Driver

About This Manual

This manual includes all of the information you need to install and use the Digidesign Session 8 system to make professional-quality digital recordings. However, before you begin to use Digidesign Session 8, you should have a basic working knowledge of your computer, the Microsoft Windows environment, and its operating conventions. You should know how to use a mouse, how to click and drag, and how to use standard menus, commands, and dialog boxes to open, save, and close files. If you need to review these techniques, please refer to your computer's documentation. In addition, you should be somewhat familiar with basic recording concepts. If you don't feel comfortable in these two areas, you may wish to familiarize yourself with these concepts in order to get the most out of your Session 8 system.

Here's what you'll find in each of the chapters of your Session 8 User's Guide.

Chapter A presents an introduction to Session 8 and hard disk recording in general, an overview of your User's Guide, and definitions of some very important terms and concepts. We strongly suggest you read Chapter A in order to become familiar with the terminology and conventions used throughout your User's Guide and Session 8.

Chapter B shows you how to install the Session 8 hardware and software.

Chapter C explains how to connect your audio interface to the rest of your studio equipment. Chapter C also includes instructions for avoiding ground loops, connecting balanced and unbalanced audio equipment, and more.

Chapter D shows you the basics of Session 8. In Chapter D you'll learn how to create, open and save sessions, and move around within Session 8. You'll also

take a quick guided tour of the main windows in the Session 8 software, and be shown how a typical session progresses in Session 8.

Chapter E explains Session 8's signal routing and audio interface controls.

Chapter F tells you everything there is to know about recording in Session 8.

Chapter G explains Session 8's vast editing capabilities, including region capturing, playlisting, using grid and shuffle modes, sync points, crossfades.

Chapter H shows you how Session 8 can be synchronized to MIDI sequencers and vice versa, and how to sync Session 8 to external devices with SMPTE.

Chapter I contains instructions on how to use all of Session 8's mixing capabilities to full advantage. You'll learn how to group faders and sends, bounce tracks, control faders and sends with MIDI.

Chapter J Covers important aspects of Hard Disk management, both from a maintenance perspective and hints on effective use of your precious disk space.

Chapter K is a reference chapter, and provides definitions and functions of every menu command and dialog box in the Session 8 program.

The **Appendix** contains supporting information regarding such related topics as hard disk maintenance, DC Offset, recommended reading.

IMPORTANT

Whenever the manual has something particularly important to tell you, such as an important user tip, or a word of caution, you'll be alerted by an **important** header, like the one above. Please pay special attention to these portions of the manual as the information presented there will help you to make the best use of your Session 8. Finally, we'd like to offer you one important tip for getting the most out of your Session 8 system: *read your manual.* The Digidesign Session 8 will let you do some truly amazing things with music and sound. Your manual is the key to unlocking its power.

A Revolution in Personal Recording

The last 10 years have seen a radical change in the way that music and sound are recorded. A decade ago, the world of high-fidelity multitrack recording belonged solely to record companies and large commercial projects. An independent musician was considered lucky to have access to even a low-quality four-track.

For an individual musician, the process of taking a project from concept to completion was time consuming and costly. An idea usually began as a poor-quality "demo" tape, and was eventually re-recorded on better equipment in a studio that charged by the hour. After lots of time and expense, the energy of the original idea was often lost in the re-recording process, while control of the project fell to the outside sources responsible for funding it. Producing an independent product that matched the quality of high-budget productions was nearly impossible.

When the MIDI standard was established in 1985, it offered musicians the ability to control the playback of multiple keyboards or drum machines from a single master controller such as a MIDI keyboard or home computer. Soon all tone-generating devices began to show up with MIDI ports. MIDI solved many problems, but it presented no way to easily integrate acoustic instruments such as guitar or human voice.

Now the Session 8 offers musicians like you the ability to record your basic ideas digitally from the very beginning, and integrate MIDI-based instruments through software links to MIDI sequencers. You can arrange and edit your material, quickly and easily, trying out any number of creative ideas, and finally, create a fully digital stereo mixdown with EQ & effects. If you wish, you can transfer the final mix digitally to a DAT recorder, send the DAT to a CD mastering house, and create your own "desktop" CDs. Thanks to Session 8, every step in the multitrack production of digital audio is available in an affordable, easy to use system.

Some New Recording Terms and Concepts

Session 8 has a lot in common with traditional multitrack recording. However, your Session 8 offers some distinctly new and exciting creative tools that may be new to you. Before you jump right into installing your Session 8 hardware and software, take a moment to look over these concepts. They are essential to a good understanding of Session 8.

How Hard Disk Recording Differs from Tape-based Recording

Hard disk recording systems and tape-based recording systems are two very different things. Tape recorders are a *linear* recording medium. This simply means that recording is done "in a line"—the line being the tape itself as it goes from beginning to end. To record or play the magnetic signals that make up sound on the tape, a tape recorder has to physically move the tape across its tape heads. In order to hear another portion of a song recorded on tape, you have to rewind or fast forward the tape to a different point and play it.

Hard disk recording is quite different. It's not a linear medium, but a *random-access* medium. This means that you can go to any spot in a song at random, and do it immediately—without having to rewind or fast forward to get there. This is because sound is not recorded upon a fixed piece of tape, but stored in digital format as a series of ones and zeros on the hard disk.

The hard drive itself works something like a record player. It has a platter similar to a record where the data is recorded, and a read/write head like a phonograph needle that does the actual recording and playback of the data. To "read" the digital audio information on the hard disk, all you have to do is drop the needle (the read/write head) in a specific location. In addition to being able to get to any part of a song almost immediately, there are other advantages. The most significant of these is that you can edit and rearrange the parts of a song *after* you've recorded it.

Rearranging a song is done by simply making the read/write head read sections of the recording in a different order (like moving a record player's needle to another groove in the vinyl). The Session 8 software makes this very easy to do by letting you create what's called a *playlist*. This is nothing more than a list of the sections in your song (verse, chorus, solo, etc.) and the order in which you wish to play or repeat them.

Unlike tape, Session 8 offers *random-access, non-destructive recording. Random access* simply means that since your audio is stored as digital data on a constantly spinning hard disk platter, you can locate and play back any portion of your recording immediately (much like a phonograph needle does on a record), without having to rewind or fast forward as with tape.

Non-destructive means that any editing operations you perform will not actually change the originally recorded part. You can digitally "cut and splice" pieces of sound to rearrange or repeat any and all parts of your recording—yet always get back to where you started.

minute if you are recording on all eight tracks. That's 80 megabytes for two minutes, 120 megabytes for three minutes, and so on. Using this guideline, a 600 megabyte hard disk will hold about 15 minutes of eight solid tracks of audio.

Though this new approach to recording and editing sound may seem strange to you at first, it will soon become second nature, and you'll find that it is far more powerful and flexible than any kind of recording that you've experienced before. Once you've experience the freedom of disk-based recording, you'll never look back.

Hardware Requirements

In order to run, the Session 8 system requires an IBM PC-compatible computer with the following:

- DOS 5.0 (or higher)
- Windows 3.1 software installed and running
- A 25 MHz 486 SX processor or better
- 4 megabytes of RAM minimum, 8 MB highly recommended if you plan to use a MIDI sequencer simultaneously
- A Super VGA monitor and graphics card (800 x 600 resolution)
- An External SCSI hard drive with a seek time of 19 milliseconds or faster, with jumper settings configured like an external SCSI drive
- 2 megabytes of free disk space on your applications hard drive
- 2 free expansion slots inside your computer (at least one of these must be a full-size 16-bit slot)
- A Windows compatible mouse
- A Windows compatible MIDI interface (optional)

Now that you have a basic understanding of Session 8 and its capabilities, you're probably eager to set up your system so that you can get started making music. Chapter B will show you how. Read on!

Soundfiles, Regions, and Playlists

At it's simplest level, Session 8 can be used as a digital recording system. But Session 8's real power lies its remarkable digital editing capabilities. To take advantage of these, you need to know a little about how the Session 8 deals with audio.

Soundfiles

Each time you record and save a take, it is stored on your computer's hard disk as a file, much like a word processor creates a text file when you type a letter on your computer. Session 8 creates digital audio files. We refer to these as *Soundfiles*.

Regions

Each Soundfile can be divided up into *Regions*, which may consist of a complete verse, a musical riff, or even a single note from a take. You define the *Region* to suit your specific needs. For instance, you could perform several takes of a solo, select the best portions of each take, and, by defining each fragment as a Region, assemble them into a single composite solo that showcases your musical ideas.

Playlists

In the process of dividing up a Soundfile into Regions, and rearranging the order of the regions, you will create what is called a *Playlist*. A Playlist is nothing more than a particular arrangement of Regions on a track. Since Session 8 has eight tracks, up to eight Playlists can be played at once.

To summarize, a take is recorded and stored to disk as a *Soundfile*. Next, sections of these takes, called *Regions*, are defined by you for editing purposes. Finally, these sections are arranged together on a track into a *Playlist*.

As you begin to use Session 8, you'll learn more about the interaction between *Soundfiles*, *Regions* and *Playlists*. They form the heart of the system's vast editing capability.

Your Hard Disk is Your "Workspace"

Another difference between recording on a hard disk and recording on tape is how you approach your music projects. In general, you can think of your hard disk as a "workspace" for your current project. When you begin composing and recording, you do it on disk. When you finish the project, you move it or "archive" it on DAT tape or other long-term storage medium. That way, your hard disk is free for a new project.

And how much recording time do you have on a hard disk? Well, each of your tracks will take five megabytes of hard disk space per minute of recording. That means that since Session 8 has eight tracks, you will use about 40 megabytes of disk space per

Chapter B
Installing the Session 8 Hardware and Software

Installing the Session 8 Hardware and Software

B

Introduction

In this chapter you'll learn how to install your Session 8 hardware and software. In order to get off to the right start, it's important that you follow the instructions in this chapter carefully. The installation covers these procedures:

1. Installing the Session 8 cards in your computer. These cards provide the computing power needed for digital recording and allow you to connect the Session 8 Audio Interface.
2. Connecting the Audio Interface to the Session 8 I/O card (the smaller of the two plug-in cards). The Audio Interface passes audio into and out of the Session 8 system.
3. Connecting an external SCSI hard disk to the DSP/SCSI card (the larger of the two cards).
4. Installing the *Session 8* software.
5. Preparing your SCSI drive.

Read on to learn how to set up your Session 8 system and get started recording and editing digital audio.

About The Session 8 Cards

Your Session 8 system comes with two cards that you will plug into your computer's expansion slots. The larger card is called the Session 8 DSP/SCSI card. It is essentially a high-speed "audio computer" which provides the digital signal processing (DSP) power that enables your Session 8 system to record and play back audio. This card also contains a connector which allows you to connect one or more external hard disks to your system for recording.

The smaller plug-in card is called the Audio Interface I/O card. It connects your system to the Audio Interface through a special 50-pin cable.

All the audio-related parameters of the Session 8 hardware are controlled from within the Session 8 software. However, there are two parameters controlling communication between your PC and the Session 8 hardware that you should be aware of: *IRQ* and *Port Address*. These parameters are not set from within the Session 8 software. Session 8 comes from the factory with default settings for these parameters and they may not need to be changed. However, you should familiarize yourself with their purpose, in case altering them is required.

About IRQ/Port Settings and Your Session 8 Cards

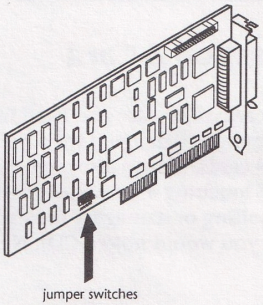
If you are new to computers, the words "IRQ" and "Port Address" may mean nothing to you. But they are very important to your computer. When a PC card is placed in an expansion slot inside your computer it must be assigned a unique "address" or location in your computer system so that it does not conflict with other cards that you may have in your computer (such as a monitor or graphics card). If two cards accidentally have the same address, your computer will not function properly. These addresses are set with small switches called "jumpers" located on the card itself.

One purpose for IRQs or "Interrupt Requests," is to allow critical events to take place exactly when they need to. In the case of Session 8, an IRQ is used to send MIDI Time Code information to a Windows Sequencer. In order to synchronize Session 8 with a Windows Sequencer, Session 8's IRQ setting must not conflict with IRQ settings of any other devices in your system.

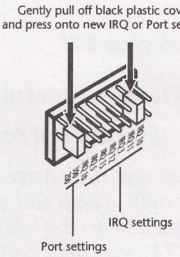
The Session 8 SCSI/DSP card (the larger card) comes with "jumpers" that allows you to set the IRQ and the Port Address. The Session 8 card is factory set to **IRQ 11** and **Port 200**.

To prevent conflicts with other cards installed in your computer, no other cards or devices in your PC may use these settings. If you find that another card in your computer is already set to **Port 200**, you can change the Session 8 card to Port 300. If you find that another card in your computer is already set to IRQ 11, you can set the Session 8 to **IRQ 3**, or **IRQ 10**. Note that IRQ 3 is typically used by one of your PC's serial ports. Therefore, you should probably try IRQ 10 before using IRQ 3, if you have a conflict that prevents using the default setting of IRQ 11. Other IRQ settings printed on the Session 8 SCSI/DSP card should not be used.

To change IRQ or Port Address settings, simply locate the jumpers on the Session 8 SCSI/DSP card and move the black plastic jumper plug to an appropriate new location. If you look at the Session 8 card, you will notice eight jumper connections near the bottom center of the card (see illustration). IRQ and Port numbers are printed on the card just below the jumpers.



The location of Session 8's jumpers



The location of Session 8's jumpers

Two of the connectors have black plugs connected to them (Port 200 and IRQ 11, the factory-default settings). Carefully pull the jumper off of the IRQ or Port address that you wish to change and push it onto the two pins corresponding to a new IRQ or Port location.

Session 8 will automatically re-configure itself if the Port jumper setting on the Session 8 card are changed. However, If you change the IRQ settings on the Session 8 card, you

will also need to edit your computer's *Config.sys* file to indicate the new setting. You won't be able to make this change until the Session 8 software installation is complete. So, if you do change the IRQ setting, make a note of it. The procedure for editing the *config.sys* will be explained shortly.

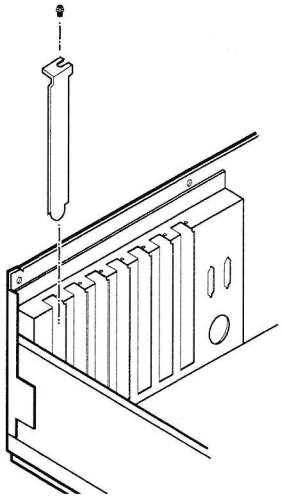
Installing the Session 8 Card

Carefully unpack both cards. They are packaged inside a special anti-static bag that prevents static electricity from damaging their sensitive electronic components. Before handling your Session 8 cards, *always* discharge any static electricity that may be on your clothes or body by touching a grounded metal surface (such as the PC's power supply case). To avoid soiling or damaging the cards' sensitive components, always hold them by their edges (as you would hold a CD). Never touch the connector pins, circuit traces or components.

Keep the anti-static bags that your Session 8 cards came in—you should always store your Session 8 cards in these when they are not installed in your PC. Keep the box that your Session 8 cards came in, too, should you need to return the cards for repair.

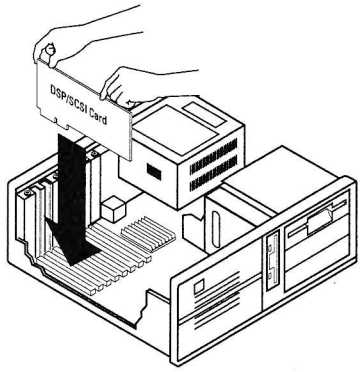
To install the Session 8 cards in your PC:

- Make sure your PC is turned off and unplugged.
- Remove the PC's top cover and slot covers.
- The Session 8 cards require two adjacent plug-in slots. At least one of these slots must be a full-length, 16-bit slot (viewed from the front of your computer, this full length slot must be to the left of another open slot. If you already have a lot of cards in your PC, you may need to move some of them around to make space for the Session 8 cards.



Preparing to install the Session 8 cards

- The Session 8 cards are factory set to IRQ 11 and Port 200. If you have other expansion cards installed in your computer which are set to either of these addresses, you need to change the addresses of these cards or your Session 8 cards. If you don't, there will be a conflict and your computer will not function properly. To learn more about IRQs, Port addresses, and how to change them on Session 8, refer to the section entitled "About IRQ/Port Settings and Your Session 8 Cards."
- Plug the Session 8 DSP/SCSI card into a full-length slot. Viewed from the front of your computer, this card will be the "left" card of the pair. Make sure the wire clips on the SCSI connector go through the slot in your computer's case. Also make sure that both sets of card edge connectors and metal bracket are properly seated. Don't force the card into the connectors. Try to put as little pressure as possible on the PC's motherboard—*but make sure that the contact tabs of the card is firmly seated in the expansion slot.*

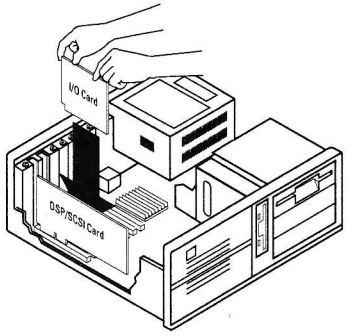


Installing the Session 8 DSP/SCSI card in the PC

- Plug the Session 8 I/O card into an adjacent full- or half-length slot, following the same precautions as above.

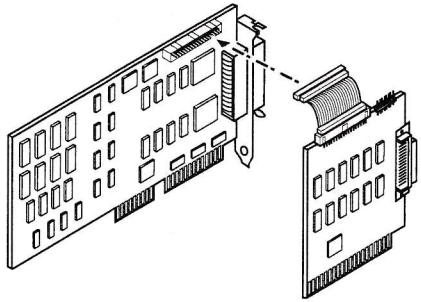
IMPORTANT

When viewed from the front of your computer, the smaller Session 8 I/O card should be installed in an adjacent slot to the RIGHT of the larger Session 8 SCSI/DSP card.



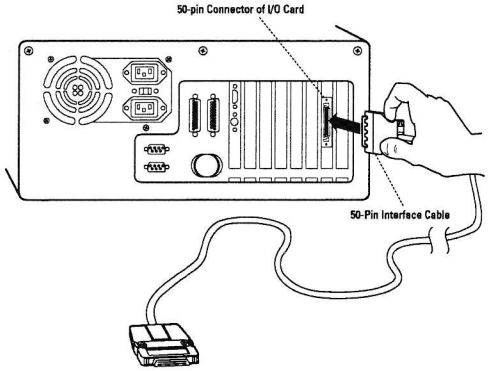
Installing the Session 8 I/O card in the PC

- Connect the DSP/SCSI card to the I/O card with the flat ribbon cable as shown. If the cards are not in adjacent slots, or their left/right order is reversed (see above) you won't be able to connect this cable properly.



Connecting the DSP/SCSI and I/O cards with the ribbon cable

- Connect one end of the 50-pin interface cable (located in the Session 8 box) to the interface port on the back of the Session 8 I/O card. Pinch the metal tabs on either side of the metal connector and push it into the 50-pin interface port. Release pressure on the metal tabs to lock the connector into place.



Connecting one end of the 50-pin interface cable to the Session 8 I/O card.

IMPORTANT

Never connect or disconnect the interface cable to the interface port of the Session 8 while the power is on. And never remove or re-seat either card, or remove or connect the ribbon cable between them while the power is on. Doing so can cause permanent damage to your system!

- After you have made these connections, restart your computer to make sure that it starts properly and that there are no hardware conflicts. If your computer fails to start properly, refer to the troubleshooting section at the end of this chapter. You may need to reseat the Session 8 cards or reset the Session 8 cards' IRQ or Port address settings.

Connecting an External SCSI Hard Disk

Once you have installed the plug-in cards in your computer, you need to connect an external SCSI hard disk to your system. You should use a standard 50-pin male-to-male "Centronics-type" SCSI cable to connect the external drive to the SCSI port on the DSP/SCSI card.

After you connect the external hard drive, you must prepare it with the special **HD Formatter™** software that is included with your Session system. You will learn how to do this later in this chapter.

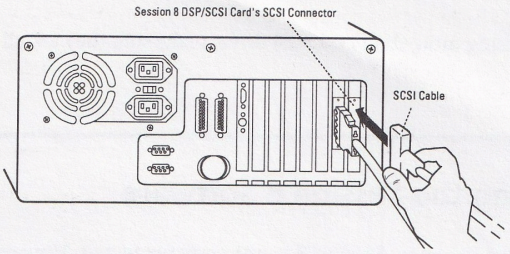
IMPORTANT

Session 8's SCSI port is designed to work with hard drives only. It will not support removable media drives, such as CD-ROM, Magneto-Optical or removable hard disk cartridge drives, nor will it work with 8mm or data DAT computer storage peripherals. Finally, you will still need a normal internal hard drive in your computer as a startup drive and for storing your applications.

Although your Session 8 system is running on a PC, your external SCSI hard drive needs to be set up with Macintosh-style jumper settings. This is normally done by your dealer when the drive is purchased, so make sure to tell them this is what you need. But don't worry—when properly connected, you'll have full access to the Session 8 external SCSI drive through DOS and Windows.

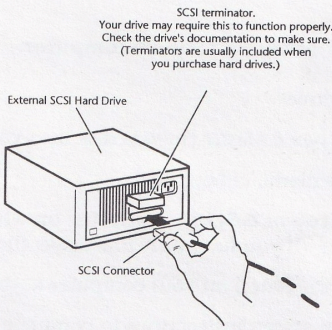
To connect an external SCSI drive to Session 8:

- Be sure that power to both the computer and hard drive is off before you connect the SCSI cables.
- Attach one end of your SCSI connector to your DSP/SCSI card, and the other end to the external SCSI drive.



Connecting a SCSI connector to the Session 8 DSP/SCSI card

- When each end of the cable is connected, snap the little wire clips into place to insure a solid connection. Loose SCSI cables can cause problems with your system.


SCSI terminator.
Your drive may require this to function properly.
Check the drive's documentation to make sure.
(Terminators are usually included when
you purchase hard drives.)
External SCSI Hard Drive
SCSI Connector

Connecting an External SCSI hard disk

For future reference and possible troubleshooting, make note of your hard drive's SCSI ID number. If you are not sure how to determine your drive's SCSI ID number, please consult the drive's documentation.

If you wish, you may connect a second drive to the first in a "daisy-chain" fashion, by connecting a standard 50 pin SCSI cable from the unused connector on your first drive to a connector on your second drive. You will probably need a SCSI Terminator on the last device in the chain.

IMPORTANT

If you are using more than one SCSI drive, make sure they are all set to different SCSI IDs!

Installing the Session 8 Software

For your convenience, Session 8 is not copy protected. However, it is important that you make a backup copy of the software in case something should happen to the master diskettes. Do this now, before you forget.

Session 8 requires that Microsoft Windows 3.1 be currently running on your PC. Without Windows, you will not be able to run the Session 8 Installer. If Windows is not already installed on your computer, install it now by following the installation instructions provided by Microsoft.

To Install the Session 8 software on your computer:

- Launch Windows
- Insert the *Session 8 Master Program* disk into your PC.
- From the File menu, choose *Run.*
- Type in **A:Setup** or **B:Setup** depending on which drive you put the Session 8 floppy disk in. (If you have only one drive, this drive will probably be *Drive A.*)
- Press Return (or Enter) on your computer keyboard.
- Follow the on-screen instructions to complete the installation. The automatic installer will install the Session 8 application and other files, including the HD Formatter hard drive formatting software, and Session 8 MIDI driver on your Startup drive.
- During the installation process, you will be asked two questions. The first is *"Do you have a Digidesign ADAT® Interface?"* If you do enter "Y" for yes. Refer to the *ADAT Interface* manual for additional installation information.
- You will also be asked what Audio Interface you have. Be sure you tell the installation software you're using an *882 Studio* Audio Interface. If you think you may have entered information for the wrong Audio Interface, delete the

Session8.ini file from your *\windows* directory and re-run the installation program.

- After you have finished installing the software, restart your computer. From now on you'll be able to start the Session 8 software by simply double-clicking the Session 8 icon.

At this point, you should initialize your SCSI drive with the HD Formatter software so that you can record audio to it. To learn how, please refer to the next section.

Preparing Your SCSI Hard Drive with HD Formatter

The external SCSI hard drive that you use for audio recording (not your *applications* hard drive) must be initialized for use with your Session 8 system. To do this, you will use the **HD Formatter** software included with your Session 8 system. This software is automatically installed on your system as part of the Session 8 software installation.

HD Formatter is a hard disk utility which must be used to prepare your external hard drive for recording with Session 8. This software should be used only on the drive that you intend to use for audio recording—not your *applications* hard drive, where your programs are installed!

Before you start HD Formatter, check your drive's SCSI ID setting (your drive's SCSI ID selector is probably located on the back of the drive case). You must know the SCSI ID number that the drive is currently set to in order to tell HD Formatter which drive to format or initialize, especially if you are connecting more than one external SCSI drive to the Session 8 card.

IMPORTANT

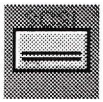
Only the formatting software provided by Digidesign with your Session 8 system can be used to format the Session 8 external SCSI drive. You cannot use a general-purpose PC disk utilities/formatting package!

Initializing a SCSI Drive

In most cases, initializing a drive will be all that is required for a drive to be used with Session 8. In rare cases, a "low-level format" will be required to begin using a drive, although initializing will usually be sufficient. Follow this procedure to initialize an external SCSI drive.

To Start the HD Formatter Software:

- Double click the HD Formatter Icon shown below:

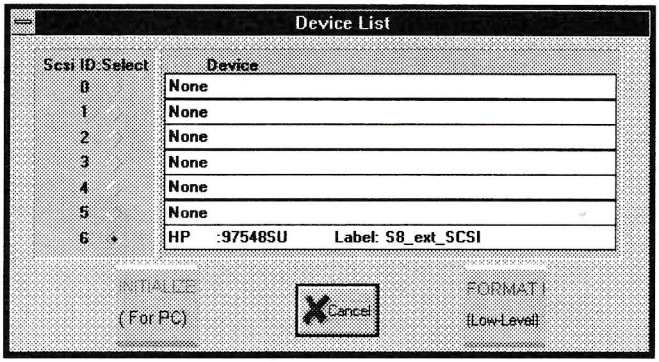


HD Formatter

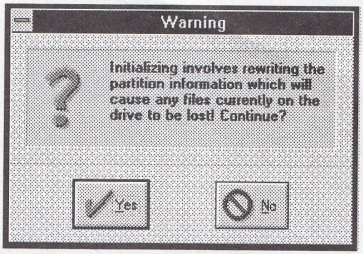
- The HD Formatter software will run, and an empty window will open. This is normal—the HD Formatter commands are all in the *File* menu. Some general information is displayed when the *Guidelines* command is selected form the *File* menu. Click OK after reading these notes.

To initialize a SCSI drive:

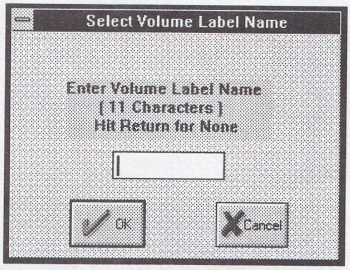
- From HD Formatter's File menu, choose *SCSI Scan*.



- In the *SCSI Scan* dialog (shown above), any drives connected to the Session 8 card will be displayed next to their SCSI ID numbers. You can only initialize one drive at a time. Click the SCSI ID number of the drive you wish to initialize.
- Click the *Initialize* button. This dialog appears:


Warning
Initializing involves rewriting the partition information which will cause any files currently on the drive to be lost! Continue?
Yes
No

- If you are sure you wish to initialize the drive, click *Yes*.
- Next, HD Formatter will prompt you with a second dialog asking if you really want to initialize the selected SCSI device. If you are sure that this is the SCSI ID of the drive you wish to initialize, click *Yes*.
- HD Formatter will ask you to label your drive, as shown below. Enter a name for your drive and click *OK*.



- HD Formatter will then begin initializing your drive. This will take a few moments.
- When the initialization process is complete, HD Formatter will let you know with a dialog. Click *OK* in this dialog.
- If you have another drive to initialize, you may do so now. Double check its SCSI ID and repeat the above procedure.
- After you have finished initializing, exit HD Formatter and Windows and restart your computer. Your drive should "mount" during the startup process (described shortly) and be ready for recording. If your computer does not start properly, refer to the troubleshooting section at the end of this chapter.

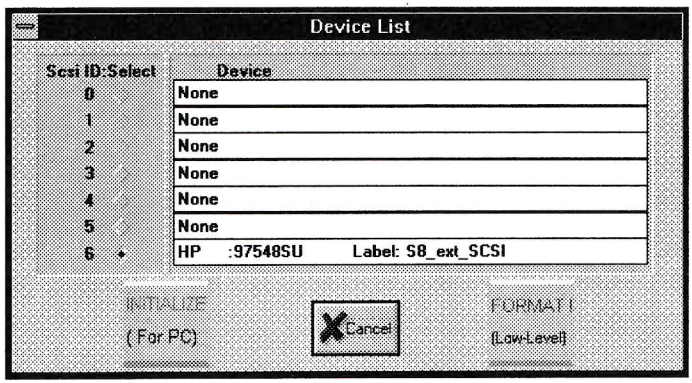
Formatting a SCSI Drive

As we mentioned previously, most SCSI drives are pre-formatted when you buy them, so you probably won't need to use HD formatter to format yours. However, if, for some reason, your drive is not formatted, you will not be able to use it with Session 8. In this case, use the *Format* button to format your drive, then initialize the drive following the procedure described above.

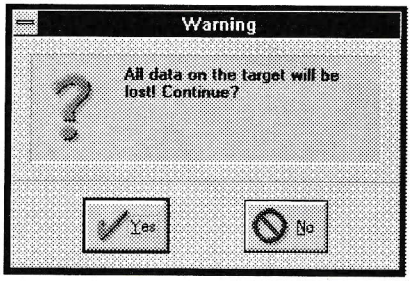
NOTE: If you are converting a drive that has been formatted for a Macintosh computer into a PC-compatible Session 8 drive, you do not need to format your drive. Simply initializing it will be enough.

To format a SCSI drive:

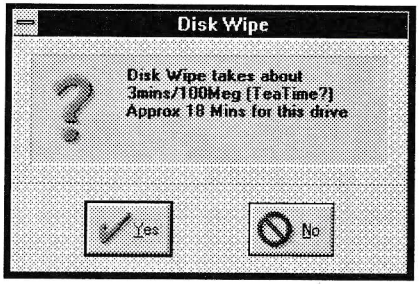
- From HD Formatter's File menu, choose *SCSI Scan.*



- In the *SCSI Scan* dialog (shown above), click the SCSI ID number of the drive you wish to format. Be sure to click the correct SCSI ID number for your drive! If you click the wrong number, you could mistakenly format the wrong drive! You may wish to double check the back of your external drive once again to confirm its ID setting before proceeding.
- Click the *Format* button. This dialog appears:

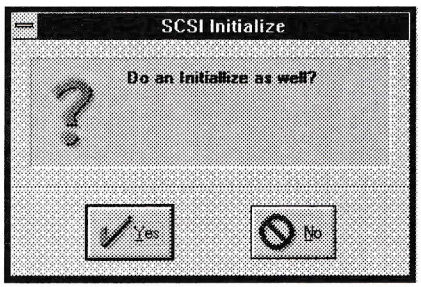


- If you are sure you wish to format the drive, click *Yes*. A second warning dialog will appear. Double-check the SCSI ID of the drive that's about to be formatted. Click OK to proceed.
- HD Formatter will estimate the time required to perform the formatting process (this depends on the size of your drive). A status indicator will be displayed while formatting takes place.
- Once the formatting is done, HD Formatter will ask you if you'd like to perform a *Disk Wipe*. A disk wipe simply sets every bit on the drive to zero. Go ahead and do this. It's good for the disk. This will also take several minutes, probably long enough to enjoy a hot beverage of your choice.



- When the process is complete, HD Formatter will let you know with a dialog. Click *OK* in this dialog.

- When you're done formatting, you must then initialize the drive before you can use it with Session 8. Clicking Yes in the dialog below will begin the Initialization procedure, described in detail in the previous section of this chapter.



- After you have finished initializing the drive, quit HD Formatter and restart your computer. Your drive should now be ready for recording. If your computer does not start properly, refer to the troubleshooting section at the end of this chapter.

Mounting Your SCSI Disk Drive

The term "mounting" a drive refers back to the days when disks had to be physically lifted onto the computer to be used. Fortunately, this is no longer necessary. After installing Session 8 hardware and software, your external SCSI drive should be mounted automatically upon system startup. (If Session 8 is unable to locate your SCSI Drive when it runs, you'll get an error message.)

As your PC is starting, you'll see something like this:

Session 8 SCSI/DSP Driver V. 1.7
Copyright (C) Digidesign Inc. 1993-1994. All Rights Reserved
Reset Delay : 3 Seconds
Port Address : 200
DSP IRQ : 11

Init Delay : 10 <this number will immediately begin a countdown to 0>

SCSI ID 6*Drive Manufacturer Drive ID drive_name (drive size) installed* as Drive D:

This startup information displays the card settings discussed earlier; the IRQ and Port Address. There is also an entry for Init Delay (the countdown) and Reset Delay.

Upon power up, your PC must sense the presence of a connected drive. Of course, the drive must be powered on with cable properly connected, etc. In rare cases, your SCSI drive may not have enough time to warm up before your PC looks for it. If your PC looks before the drive is ready, it will assume that no drive is present and Session 8 won't be able to play or record.

The Init Delay is the length of time after startup that your computer will wait to "look" for drives on the Session 8 external SCSI port. When that time expires, a "SCSI Reset" command is issued, and the system pauses for a few seconds to see if any drives respond. This pause is the Reset Delay, which by default, is three seconds in length.

Editing Your Computer's Config.sys file

In the root directory of your startup disk drive, you'll find a text file called *Config.sys*. When the Session 8 software is installed, it automatically changes this file, adding a device driver statement:

Device=C:\SESSION8\DIGI8TRK.SYS

This driver statement describes certain parameters of your PC/Session 8 system setup. (If you installed the Session 8 software to another directory, this statement may look a bit different.) In most circumstances, you will not need to modify this statement. There may be a couple of cases however, when you do need to modify this file.

IMPORTANT

When ever the *Config.sys* file is changed, you must save the changed version of the file and then restart your PC for the changes to take effect.

Changing the IRQ Setting

You will need to modify the driver statement if you changed the IRQ setting. The IRQ setting facilitates communication between an internal Windows MIDI sequencer and the Session 8 system via MIDI Time Code. If you have discovered that your Session 8 is conflicting with another device in your computer which is already set to this IRQ, you may need to change the Session 8's IRQ. Session 8 is set to IRQ11. You can change this to IRQ3 or IRQ10 if you discover an IRQ conflict in your system.

To change the IRQ to a setting other than IRQ11, move the jumper on the Session 8 card from IRQ11 to either IRQ3 or IRQ10 as described in the previous section. Then make the following change to the *Config.sys* file with a word processing program:

Device=C:\SESSION8\DIGI8TRK.SYS **/DSP_IRQ=3**

or

Device=C:\SESSION8\DIGI8TRK.SYS **/DSP_IRQ=10**

Make sure that there is a space before the forward slash. It is possible to add other parameters (for reasons explained shortly) to the device driver statement—just make sure that each addition is separated by a space. Please be aware that setting Session 8 to IRQ3 will conflict with any device connected to the *"Com2"* serial port of your computer.

Another change you may need to make to the config.sys sets the length of time your PC will "wait" for the Session 8 SCSI hard drive to warm up when the computer is turned on or restarted. This procedure is described in this chapter in the section entitled "Mounting Your SCSI Drive."

Changing The SCSI Startup Delay in the Config.Sys File.

If your external drive takes more (or consistently less) time than the Init Delay's 10 second default, you can change the countdown length by editing a line in your Config.sys file. (To bypass this delay, hit the *Esc* key.) It is possible to change the device driver statement to shorten or lengthen this delay. To do this, make the following change to the Config.sys:

Device=C:\Session 8\Digi8trk.sys **/Init_Delay=15**

This example gives the system 15 seconds; you can choose any amount of time you think is necessary for your system, including 0.

Once the driver is finished with its countdown, it will send a reset command to the SCSI chain and attempt to mount any drive present. It will wait 3 seconds for the drive(s) to respond. If you wish to change this reset delay, make the following change to the Config.sys:

Device=C:\Session 8\Digi8trk.sys **/SReset=5**

This example gives the system 5 seconds; you can choose any amount of time you think is necessary for your system.

IMPORTANT

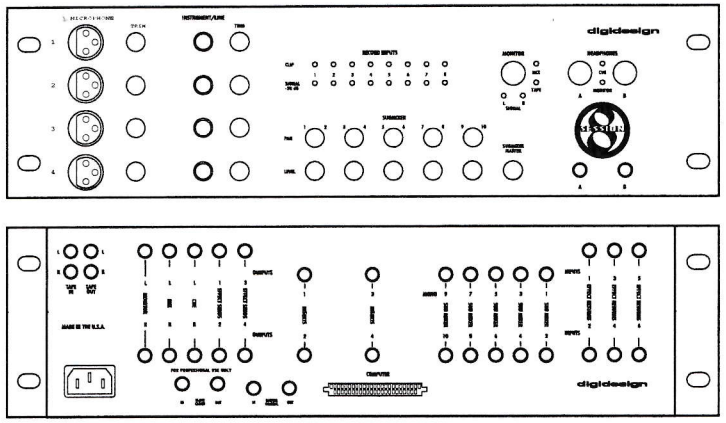
When ever the Config.sys file is changed, you must save the changed version of the file and then restart your PC for the changes to take effect.

Setting Up the "882 Studio" Audio Interface

The 882 Studio Audio Interface provides the inputs and outputs for your system. It has enough ins and outs to connect an entire studio's gear without requiring an external mixing board. The Session 8 Audio Interface includes:

- 4 front panel inputs (switchable to mic or line-level inputs)
- 6 rear panel line-level inputs/effect returns
- A 5-input stereo sub mixer
- 4 effect sends
- 4 effect inserts
- 2 headphone outputs
- 1 stereo Monitor output

- 1 stereo Mix output and 1 stereo Cue output
- 2 channels of digital audio input and output for recording to or from a DAT or other digital recorder that has a S/PDIF-type digital connector

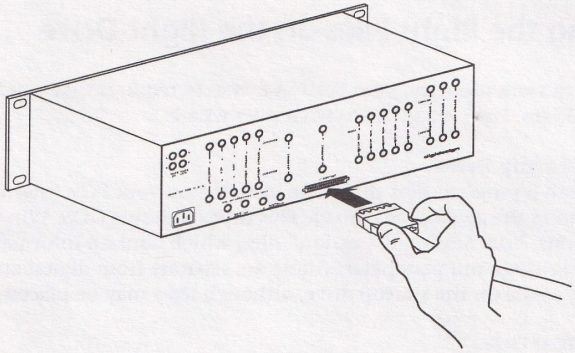


The front and back panels of the Session 8 Audio Interface

Carefully unpack the Audio Interface. Depending on how your studio is set up, you may want to make audio and power connections before you mount the Audio Interface in your rack. It is a standard 19", three-rack space device.

To connect the Audio Interface:

- If you have a rack, rack mount the Audio Interface. Rack screws are included in the Audio Interface box.
- Connect the 50-pin interface connector cable to the back of the Audio Interface. To do this, pinch the metal tabs on either side of the metal connector and push it into the 50-pin interface port labeled *"Computer"* on the Audio Interface. Release pressure on the metal tab to lock the connector into place. Please be careful when connecting this cable. The pins in the connector can be bent if you apply too much force.



Connecting the 50-pin interface cable to the Audio Interface

- Finally, connect the power cable to the rear of the Audio Interface. The Audio Interface automatically selects the power setting for use with any standard voltage and frequency. Simply connect the power cable appropriate to your local power standard and the Audio Interface will function normally.

IMPORTANT

Never connect or disconnect the interface cable to the Audio Interface while the power is on! Doing so can cause permanent damage to your system!

Note: Turn down the volume on your amplifier before you power on or shut down your PC. When power to the Session 8 or Audio Interface is turned on or off, it may emit a "thump" that could damage your speakers at high volume.

Your Audio Interface is almost ready to use. You'll learn how to connect instruments and effects devices to the Audio Interface in the next chapter, *Connecting Your Studio*. But right now, you're going to complete the final step of your Session 8 set up by installing the Session 8 software.

Putting the Right Files on the Right Drive

In order to work properly, your Session 8 system requires that you keep certain files on specific drives. Here is a guide to what goes where:

On the Startup Drive
The Session 8 program files should be installed on your PC's internal *startup drive* (also referred to as the *applications* drive). This drive contains DOS, Windows and your other applications. Your Session 8 "session" files, which contain information about a given session's settings and parameters (these are separate from digital audio files), should generally reside on the startup drive, although they may be placed on any drive.

On the SCSI Drive
Soundfiles must be stored on your *SCSI drive*, the drive which is connected to the DSP/SCSI card. In order to record and play back several channels of digital audio simultaneously, the Session 8 must read and write a tremendous amount of data from hard disk at very high speed. Only a drive which is directly connected to the Session 8's DSP/SCSI card can accommodate such a large amount of digital "traffic" without getting bottlenecked.

Starting the Session 8 Software

Before running Session 8, you must start Windows. If your computer's *autoexec.bat* file does not automatically run Windows when you turn it on, type:

C:> win (and press the return key)

Then, double-click on the Session 8 Group icon from the Window's Program Manager. This will open the Session 8 group, if it's not already open, and the Session 8 icon will appear. Double-click on the Session 8 icon (shown below) to start the Session 8 application.

The Session 8 icon

Session 8 can also be started from the DOS command line with this command:

C:> win session8 (and press the return key)

This command can be added to your *autoexec.bat* file if desired. Doing so will cause Windows and Session 8 to automatically run every time you turn your computer on. If you're not sure how to do this, consult your computer's DOS and/or Windows documentation.

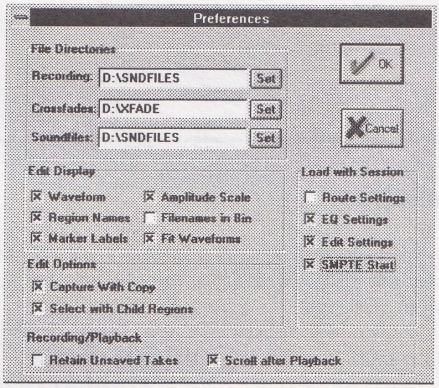
The Session 8 introduction screen will be displayed for a moment, and then a large window with tape recorder style transport and other controls should appear. If Session 8 is unable to detect the external SCSI hard drive or the Audio Interface, a warning message will be displayed. In this case, see the troubleshooting section at the end of the chapter.

Configuring Session 8 For Your SCSI Drive

Before you can begin recording with Session 8, you need to tell the Session 8 software what drive and directory it should use for storing and retrieving Soundfiles.

To set your Soundfile Directory Path:

- Choose the *Preferences* command from the *Options* menu. This dialog appears:



The Preferences dialog

- Under the *File Directories* heading, locate the *Recording* option. These entries should default to D:\ (or the letter of your first SCSI drive). You can leave this, or create a new directory. If the white box is empty, your drive may not have mounted. Refer to the troubleshooting section at the end of this chapter.
- Click the *Set* button for the *Recording* parameter.
- Use the *Select Directory* dialog box to specify the drive letter (A, B, C, etc.) of your SCSI drive (typically drive *D:* or higher), as well as the sub-directory where you want your audio files stored. You can create a *new* directory by clicking the *Create Directory* button in the dialog that appears.
- Repeat the process for the remaining two entries, *Crossfades* and *Soundfiles*. All three can be set to the same drive and sub-directory if desired.
- Click *OK* to close the *Preference* dialog box.
- Choose *Save Settings* in the *Options* menu. Session 8 will save the drive settings you made, and re-load them automatically from now on.

Note: While you can store Soundfiles from multiple Sessions in the same directory, this can lead to a housekeeping problem as numerous files pile up. Also, there is a fixed DOS limit on the maximum number of files a directory can hold.

Therefore, you should consider creating a new sub-directory for each Session, following the procedure described above.

Your Session 8 system should now be ready to use. However, if anything doesn't seem right, refer to the following section.

Troubleshooting

Though Session 8 is relatively easy to set up and use, there is always a chance that your system setup may not go as smoothly as you would wish. This section offers a few troubleshooting suggestions.

Before you call for help, here are a few things to check:

1. Problem: Your computer doesn't start up properly.
Possible Solutions:

- Is your computer plugged in and switched on?
- Are your Session 8 cards properly seated in your computer's expansion slots?
- Are there other cards/hardware devices in your computer set to the same Port address as the Session 8 card (Port 200)? If so, read the section entitled *About IRQ/Port Settings* at the beginning of this chapter and find out how to change Session 8's Port address.

2. Problem: After the Session 8 cards are installed, another device in the computer stops working.
Possible Solutions:

- Are there other cards/hardware devices in your computer set to the same Port address as the Session 8 card (Port 200)? If so, read the section entitled *About IRQ/Port Settings* and find out how to change Session 8's Port address.

3. Problem: When the computer starts up, it displays the message *"Host not found."*.
Possible Solutions:

- Is the Session 8 SCSI card installed properly?
- Are there other cards/hardware devices in your computer set to the same Port address as the Session 8 card (Port 200)? If so, read the section entitled *About IRQ/Port Settings* at the end of this chapter and find out how to change Session 8's Port address.

4. Problem: HD Formatter does not find your external SCSI drive when you try to format or initialize it.
Possible Solutions:

- Is the drive's power on?
- Is the drive connected to the Session 8 SCSI card?
- Is there a terminator connected to the drive? It should be.
- Is there another drive set to the same SCSI ID?
- Is the SCSI cable connected to the drive damaged?

5. Problem: External hard drive won't mount when you start your computer.
Possible Solutions:

- Is the power to the drive turned on?
- Did you initialize the drive with HD Formatter?
- Is there a SCSI terminator connected to the drive? There probably should be. Consult your drive's documentation.
- Do you have more than one drive connected to the Session 8 SCSI card with the same SCSI ID?
- Does the computer say "Host not found"? If so, see problem #3.
- Does the computer say "Device not ready"? If so, the drive may not have been up to speed when you started your computer. Try restarting your computer.

6. Problem: When you start Windows, one of these messages appears *"Missing Himem.sys"*, or *"Error executing application, etc."*
Possible Solutions:

- The Session 8 Setup Program adds a device driver statement to your CONFIG.SYS file that looks something like this:

  DEVICE=C:\SESSION8\DIGI8TRK.SYS.

  The Session 8 setup program will automatically add this statement to the end of the Config.sys file. If you were to install a memory manager such as EMM386 or QEMM after installing Session 8, make sure that its statements occur before the Session 8 device driver statement. You can do this by using any standard DOS/Windows text editor or the *sysedit* command in Windows. If for some reason, *himem.sys* is proceeded by the Session 8 device driver statement, follow the same instructions as above.

7. Problem: When you start the Session 8 software this message appears, *"No SCSI device detected."*
Possible Solutions:

- Is your external SCSI drive properly connected to the Session 8 SCSI card?
- Have you initialized your SCSI drive with HD Formatter?
- Did you remember to restart your computer after you initialized your drive?
- Are the Session 8 cards installed?

8. Problem: When you start Session 8, the message "No Audio Interface Detected" appears.
Possible Solutions:

- Is the Audio Interface turned on?
- Is the Audio Interface properly connected?
- Are the Session 8 cards installed?
- Is the Session 8 I/O card connected to the SCSI card?

If you have checked all of these things and are still perplexed, you may wish to call Digidesign Technical Support. But before you do, read the rest of this chapter , which may offer some help with some of the more technical aspects of your system's configuration.

Now that you've finished installing your Session 8 system, it's time to turn your attention to the next chapter, and get started connecting the rest of your studio equipment.

Chapter C
Connecting Your Studio

Connecting Your Studio

Introduction

Before you begin connecting the rest of your studio equipment, you have an important choice to make about how you plan to use the Session 8 system. Session 8 has two different operating modes, *Internal Mix Mode* and *External Mix Mode*, which allow you to configure Session 8 to match your particular studio setup. You can switch the Session 8 software back and forth between modes instantly, but if you do, you may have to physically repatch some of your gear to match the new software configuration. We suggest that you read the following sections carefully, and consider both options before you start plugging things in.

Session 8's Two Operating Modes

Session 8 has two different operating modes, *Internal Mix Mode* and *External Mix Mode*, which allow you to configure Session 8 and the 882 Studio Audio Interface to match your particular studio setup. The following sections describe each of these two modes and helps you choose which is most appropriate for your situation.

External Mix Mode

(Inputs/Outputs labeled in red on rear of Audio Interface)

If you already use a dedicated mixing console and many effects devices in your studio, External Mix Mode may be for you. This mode provides eight discreet outputs—one for each track — and bypasses Session 8's stereo mixing/effect send capabilities. This allows you to patch the Audio Interface into your console and simply use Session 8 as a digital multitrack recorder with editing capabilities. In this configuration, you will keep your effects devices and MIDI equipment connected to your mixing console and use that for your final mixdown.

Internal Mix Mode

(Inputs/Outputs labeled in white on rear of Audio Interface)

Internal Mix Mode allows you to use your Session 8 software and Audio Interface as a digital mixing console. It eliminates the need for an external mixer by allowing you to create a mix—complete with effects—within your Session 8 system. Because you create your mix within Session 8, Internal Mix Mode also has the advantage of allowing you to make use of Session 8's MIDI integration to automate your *entire* mixdown with a MIDI sequencer. This makes Internal Mix Mode a very powerful, optimum-fidelity configuration.

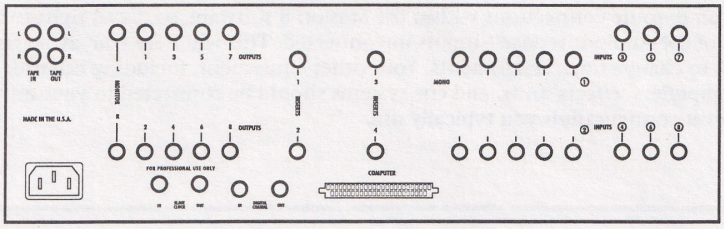
The next sections describe how you should connect your equipment to Session 8 for both operating modes. Since it is impossible to describe every possible connection/configuration for Session 8 in either operating mode, we have given one general example for each, beginning with External Mix Mode. You'll learn how to set Session 8 to Internal or External Mix Mode in Chapter D: *Basic Concepts*.

External Mix Mode: Discrete 8 channel operation

(Inputs/Outputs Labeled in Red on Rear of Audio Interface)

External Mix Mode allows you to connect the inputs and outputs of the Audio Interface to a multi-bus console. The *red* markings on the back panel of the Audio Interface refer to the way that the inputs/outputs function in *External* Mix mode.

In External Mix mode, the output jacks at the back left of the Audio Interface function as *Monitor*, and direct track outputs 1-8. When you connect your gear, make sure that you look closely at these labels to match the mode that you wish to operate in. If you wish, the Audio Interface's front-panel inputs can still be used in External Mix mode, but you may find that the back-panel inputs are more convenient to use.

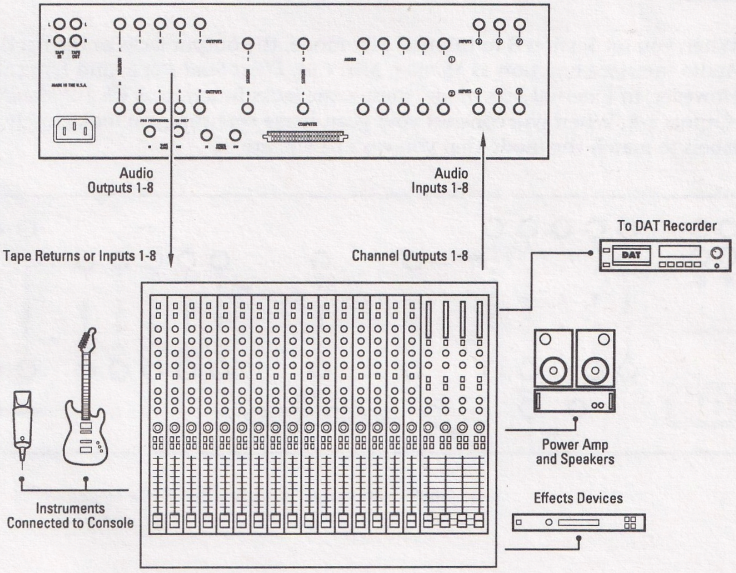


Audio Interface back panel outputs, External Mix Mode

C

Connecting External Gear for External Mix Mode Operation

The following diagram illustrates how these inputs and outputs can be used in External Mix mode.



Suggested connections between a typical console and the Audio Interface with Session 8 in External Mix Mode.

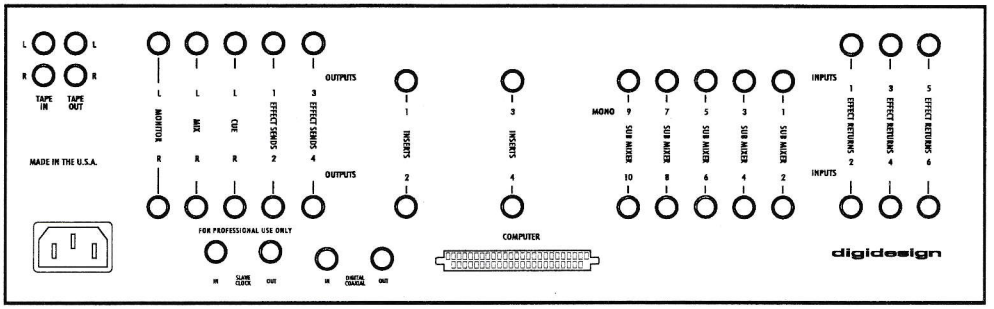
You can re-route connections within the Session 8 software, so it's all right to leave some of the Audio Interface's inputs unconnected. This will help you avoid re-patching cables to change track assignments. Your other equipment, including monitor speakers and amplifiers, effects units, and cue systems should be connected to your mixer in whatever configuration you typically use.

Internal Mix Mode: Internal Digital Mixdown

(Inputs/Outputs Labeled in White on Rear of Audio Interface)

When Internal Mix Mode is enabled, the Session 8 functions as a stereo mixer. The *white* markings refer to the way that the inputs/outputs function in *Internal* Mix mode. The Audio Interface's front-panel inputs are the same in both Internal and External Mix mode.

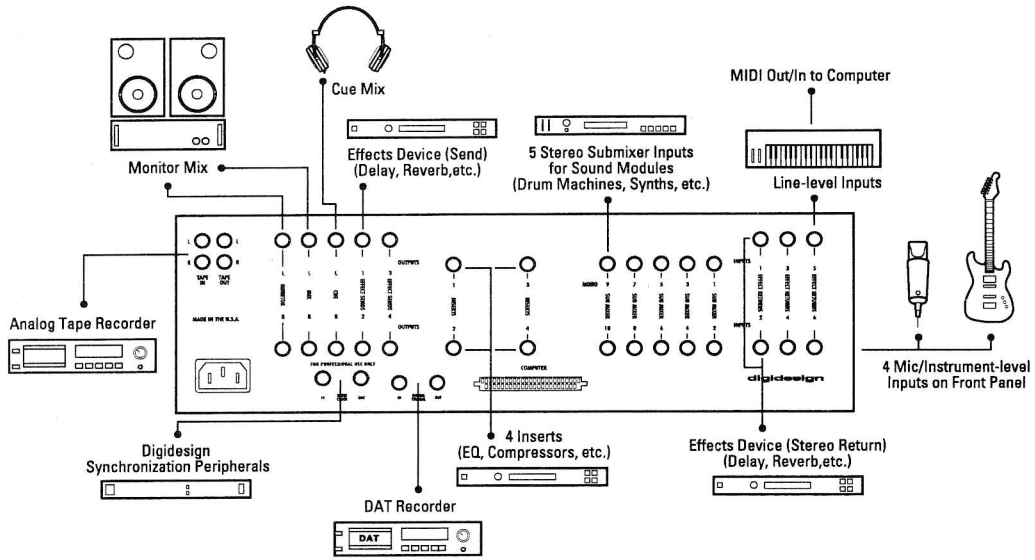
When you set Session 8 to Internal Mix mode, the output jacks at the back left of the Audio Interface function as *Monitor, Mix, Cue, Effect Send 1 & 2,* and *Effect Send 3 & 4.* However, In External Mix mode, these same jacks function as *Ch 1-2 Monitor,* and direct outputs 1-8. When you connect your gear, make sure that you look closely at these labels to match the mode that you wish to operate in.



Audio Interface back panel outputs, Internal Mix Mode

Connecting External Gear for Internal Mix Mode Operation

The following diagram illustrates how these inputs and outputs can be used in Internal Mix mode.



Suggested use of Audio Interface inputs/outputs in Internal Mix Mode

In this example, audio input is supplied from a mic or instrument plugged into the Audio Interface. Control room monitoring is done through the monitor and/or mix outs feeding an amp and speakers. A headphone cue system is fed from the cue outputs. For mixdown, a DAT deck is connected to the digital stereo outputs. Effects inputs are fed from Effect Send 1 (output 5). Up to four effects devices can be connected to effects sends 1-4. The stereo effect returns are patched to Input/Returns 1-2. Up to four effects devices can be returned to these inputs.

Other devices shown in this illustration include compressors or EQs connected to the inserts, a Digidesign SMPTE Slave Driver™ connected to the Slave Clock inputs/outputs for SMPTE synchronization purposes, and MIDI sound modules connected to the Sub Mixer.

If you have more gear than can be connected to the Audio Interface's inputs and outputs, you may want to consider using an external patch bay. This will help you avoid frequently re-patching connections to the Audio Interface.

Audio Connections

The Audio Interface's analog audio connectors consist primarily of unbalanced 1/4" phone jacks. Four balanced XLR microphone inputs and RCA-phono tape inputs and outputs are also provided. Although the Session 8 Audio Interface is designed to connect with -10 dBu gear, it can be connected successfully to a variety of pro-level, +4 dBu equipment. The following section describes how to connect your studio gear.

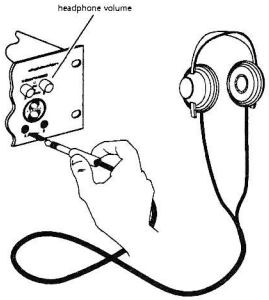
Monitoring

The most basic requirement in a any recording session is to be able to hear the music you're recording. Session 8 offers a full range of monitoring options—everything from a single pair of headphones to individual mixes for the loudspeakers in your control room and a headphone mix for the musicians.

Connecting Headphones

The simplest option is to plug in a pair of headphones into the front panel, as shown below. Be sure to turn headphone volume down all the way while you are plugging and unplugging instruments. These headphone amplifiers have been designed for low to medium efficiency studio-style headphones. High-efficiency Walkman-style headphones may be too loud, and their use is not recommended.

There are two headphone jacks, each with its own volume control. Both of these carry the same audio signal. Two different mixes can be monitored in the headphones—the main stereo mix or the Cue mix. The Session 8 software lets you choose which of these two mixes you wish to hear.



Connecting Headphones to the Audio Interface

Connecting a Control Room Amplifier and Monitor Speakers

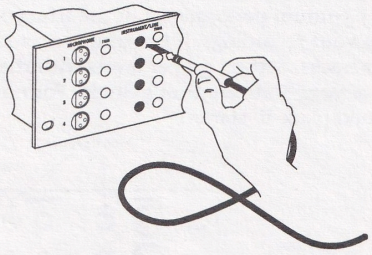
Session 8's Audio Interface provides a separate stereo output (and a front-panel level control) for your control room monitors. Simply connect the rear-panel *Monitor* outputs from the Audio Interface to a power amplifier and speakers. If you have self-powered monitor speakers, they can be directly connected to the Session 8 *Monitor* outputs.

Two different mixes can be sent to the control room monitors—the main stereo mix or the stereo outputs of a two-track tape deck. You can select which of these two mixes you wish to hear from within Session 8's *Route* window (you'll learn more about this in Chapter E). Overall volume can be adjusted with the *Monitor* knob on the Audio interface's front panel.

Front Panel Line Inputs

The Audio Interface's front panel has four inputs, labeled 1 through 4. Each has both a mic and line-type connector. However, only one or the other is active at the same time. An on-screen switch in the Session 8 software's *Route* window controls which connector is active.

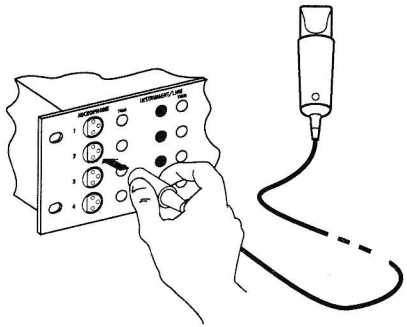
Guitar preamps, keyboards, and other electronic devices can be connected to one of the four line inputs to the right of the mic inputs. Connect your instrument to one of these inputs using a standard 1/4" guitar cord.



Line-level connections can be plugged into these front-panel inputs

Front Panel Mic Inputs

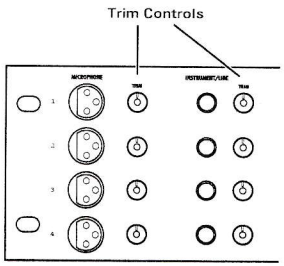
A microphone can be connected to one of the four mic inputs on the front panel. Any standard, professional-quality microphone with a standard XLR 3-pin connector can be used with Session 8. However, the Audio Interface does not provide phantom power. If you want to use a Mic that requires phantom power, you'll need an external power supply.



Mic-level connections can be plugged into these front-panel inputs

Trim Controls

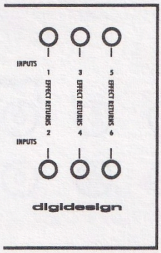
Each front panel input connector has its own trim control. The trim's purpose is to match the level of an incoming audio signal to the level the various Audio Interface inputs require for optimum performance. If the trim control is set too low, analog noise may be audible on your recordings. If the trim is set too high, you may cause digital distortion on your tracks. Setting proper levels with the trim controls is discussed in the *Recording* chapter of your Software User's Guide. For now, a setting of about half way (12 o'clock) is a good place to start.



The front panel trim controls

Back Panel Inputs/Effect Returns

Session 8 has additional line-level inputs on the back panel. These inputs are labeled in white as *Effects Returns 1-6*. The main difference between these inputs and the line-level inputs on the front panel is that they have no trim control. Therefore, we recommend that you only connect devices which have their own output level controls to these inputs. If you don't, you may not be able to set appropriate gain levels, and you might end up adding analog hiss or digital distortion to your tracks.

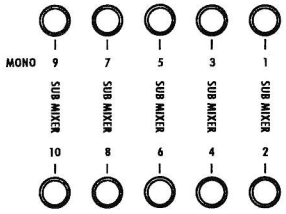


Back Panel Inputs/Effect Returns

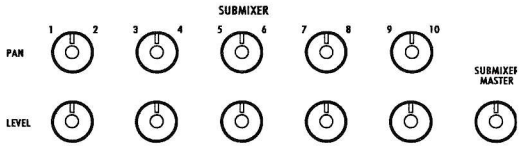
The Sub Mixer

The Session 8 Audio Interface includes a stereo sub mixer. Five stereo (or 5-10 mono) inputs can be connected to the sub mixer. Each stereo pair of inputs has its own front-panel volume and pan control. If you use a MIDI sequencer as part of your studio, these inputs are ideal for connecting multi-timbral MIDI instruments to Session 8. These inputs can also be used as effect returns. The front panel knob labeled *Submixer Master* sets the overall level of all five stereo inputs.

If a mono input is plugged into the upper jack of a sub mixer input (marked *MONO*), the pan control will move that mono sound across the stereo field. If a stereo signal is connected to a Sub Mixer input, the pan knob functions more like the balance control on a home stereo, adjusting the relative levels of the left and right signals. The Sub Mixer corresponds to Audio Interface inputs 1 and 2.



The Sub Mixer back panel inputs



The Sub Mixer front panel Pan and Volume controls

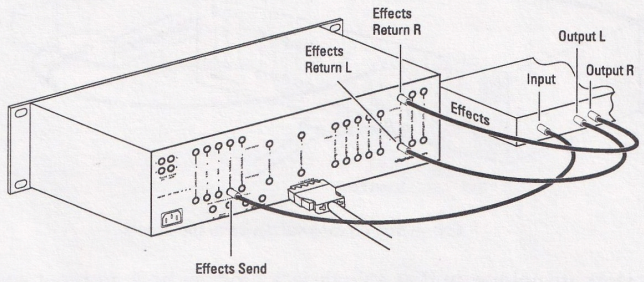
Connecting Effects Units

The Audio Interface allows you to connect effects units and other audio processing equipment to your system. These optional external, or "outboard" devices fall into two broad categories—reverb, echo, and other time delay-type effects; and equalizers, compressors and other signal processing gear. Session 8's Audio Interface offers two different ways to connect these two categories of devices.

Connecting Reverb-type Effects to Send and Returns

Reverb and echo units are probably the first type of effect you'll want to connect to Session 8. These "time-delay" effects are designed to be connected to the Audio Interface's *Send and Return Jacks*. Once a reverb unit is attached in this way, you can "send" a variable amount of a track to the external effects unit using the on-screen *Effect Send* knob in Session 8's Mix window. Four individual send controls are available for each track. If you have both a delay and reverb unit, the sound of one track could be sent to the reverb unit, while another track could be sent to both reverb and delay.

Of course, sending an audio signal to an effects unit is only half the story—you need to get the output from the effect unit back into the Audio Interface so that you can hear the results and blend them with your original, unaffected track. Any Audio Interface input can be used as an effects return.



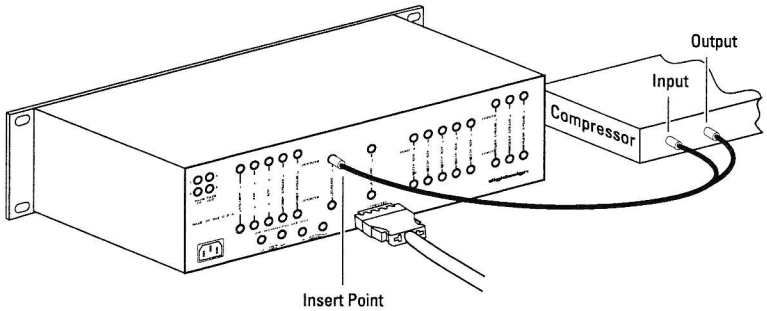
A typical effects send/return connection

When using an effect in this send-type of configuration, make sure the unit's internal mix or balance between direct (or dry, un-processed) and wet (or effected signal) is set so that *only* the processed signal is sent out to the Audio Interface. On most effect units, a balance setting of 100% is the appropriate setting. If you've been using an effects unit in an instrument setup, such as a guitar effects rack, you'll probably find the balance to be below 50%. If the unit has separate dry and effect level knobs, turn dry level control off. If you don't do this, the dry, un-processed signal will be present in an effect's output along with the desired processed sound, and you'll have trouble accurately controlling the effect balance in your final mix.

Connecting Compressors and Equalizers to Insert Points

There is a second general category of audio processing equipment, which include equalizers and compressors. These devices are used to process an audio signal in more subtle ways, such as changing the tone or the frequency balance of a sound (an equalizer), or to automatically reduce the peak volume of a sound whose level varies widely (a compressor/limiter). These types of audio processors are connected in a different way. They are designed to be "inserted" into a signal's path, and *only* the modified version of the signal that they produce is heard.

The *Insert Points* on the Audio Interface are designed to accommodate these types of devices. Again, the inputs and outputs of the outboard units are connected to the Audio Interface's insert jacks as shown:



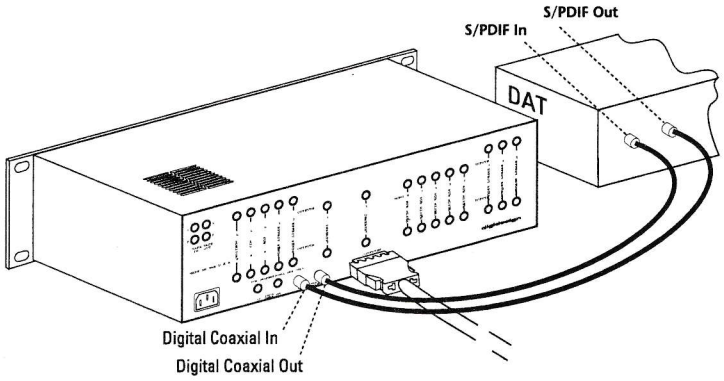
Connecting an external device to the Inserts

The insert jacks are unique, in that a single jack provides both an input and an output signal. To access both input and output from this jack, a special cable must be used. This cable consists of a stereo 1/4" plug on one end with two mono 1/4" plugs on the other end. Cables of this type are commonly known as "insert cables." The tip contact is the signal output and the ring contact, the input. The tip cable of your insert cable should go to your compressor's input, and the ring-connected cable to the compressor's output.

Connecting Equipment with Digital Audio Ins and Outs

Because it features digital inputs and outputs, Session 8 allows you to digitally record to or from a digital device such as a DAT recorder. The 882 Studio Audio Interface's digital audio connectors are two-conductor, phono (RCA) type jacks for S/PDIF format digital audio input and output.

If you plan to use a DAT player, CD recorder, or other digital input and output device with your Session 8 system, be sure the external device supports the S/PDIF format—the Audio Interface's S/PDIF inputs and outputs should *only* be connected to another S/PDIF device.



Connecting a DAT recorder to Session 8

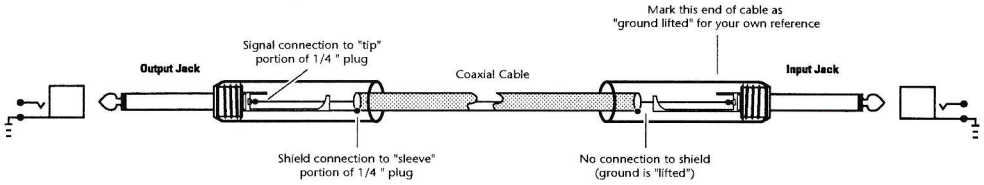
To connect your Session 8 system to a DAT recorder:

- Connect the digital output of the Audio Interface to the S/PDIF input of the DAT deck. If you are in Internal Mix Mode, your entire stereo mix will be sent out of these outputs. If you are in External Mix Mode, only channels 1 and 2 will be sent out of these outputs.
- Connect the S/PDIF output of the DAT to the digital input of the Audio Interface. The DAT recorder will be routed to Session 8 inputs 1 and 2.

Audio Systems and Ground Loops

In unbalanced and balanced audio systems, care must be taken to minimize extraneous ground-related hums and buzzes. Connecting different pieces of audio equipment together can result in a condition where more than one path to ground exists. This is known as a ground loop. Where does the loop come from? Well, ideally, each device should be connected to ground through the third pin on its AC cord. However, an additional ground path can be created through the sleeve and shield connection of unbalanced audio lines used to interconnect your gear (touching a metal chassis sometimes has the same effect). These different ground paths create a ground loop, which can increase hum and buzz levels.

In many studios, this won't be a problem, and if your setup is not troubled with hum or buzz, you won't need to refer to this section. However, if you experience excessive hum or buzz in your system, you may wish to try breaking potential ground loops. This can be done by manually wiring your audio cables as shown in the illustration:



Wiring diagram for unbalanced connections

As you can see, the shield/ground connection is disconnected at one end of the cable. This disconnected shield end of the cable should be clearly marked. The ground-lifted end of each cable should be connected to equipment inputs.

Lifting the shield at one end breaks the second path to ground, preventing ground loops. You still gain the benefits of a shielded cable, since the shield is still connected to ground at one end. It is important to be consistent when cabling your system with shield-lifted cables. If you connect the lifted cable ends to device inputs, you should do so for all device inputs. You can also try connecting the shield-lifted ends to device outputs if necessary. Another way to break ground loops is to separate the metal chassis of gear in your rack and use non-conductive rack rails in your equipment racks.

If the problem persists, you may wish to contact a qualified electrician to determine the quality of your studio's AC ground. A three-prong electrical circuit tester can also provide some, but not all information about possible wiring errors in your building. However, any repairs or additions to your studio's power and grounding wiring should be performed by a qualified electrician.

If you are recording electric guitars (especially those with single-coil pickups!) you should be aware that your computer's monitor is a significant source of interference. This can appear as a loud buzz in your guitar's signal. This type of buzz is related to the proximity of your guitar to the screen. In this case, moving back from the screen will help. You may also find that turning your guitar towards or away from the screen makes the buzz get louder and softer. Find the "quietest" position and return to it when recording is taking place.

Now that you have connected your studio, you are ready to learn everything you need to know about recording, editing, and mixing with your new Session 8 system. Exciting things await!

Chapter H
MIDI and Synchronization

MIDI and Synchronization

Introduction

In addition to functioning as a state-of-the-art production system for digital audio, Session 8 allows you to seamlessly integrate the world of MIDI into your music projects. If you own a MIDI interface, external MIDI sound modules, and a Windows MIDI sequencer, you can take advantage of the following Session 8 MIDI features:

- Synchronized playback and recording of MIDI tracks and digital audio tracks with a Windows-compatible MIDI sequencer. You can play back MIDI instruments (drum machines, synths, etc.) in sync with Session 8's digital audio tracks. This is an ideal configuration for users who want to use all of Session 8's tracks exclusively for the things MIDI sequencers can't do—vocals, guitars, acoustic instruments, etc.
- Automated mixdown. You can record and play back Session 8 fader moves with a Windows-compatible MIDI sequencer such as Passport's *Pro 4*, 12 Tone Systems' *Cakewalk Professional*, or Steinberg's *Cubase*.
- Synchronization to external multitrack recorders via MIDI Time Code using the optional Digidesign SMPTE Slave Driver™.
- Hands-on mixer and transport control with the Digidesign *R1 Remote Controller* or other MIDI fader box.

This chapter provides you with the information you need to configure your Session 8 with MIDI equipment and put these MIDI-based features to use.

MIDI Connections

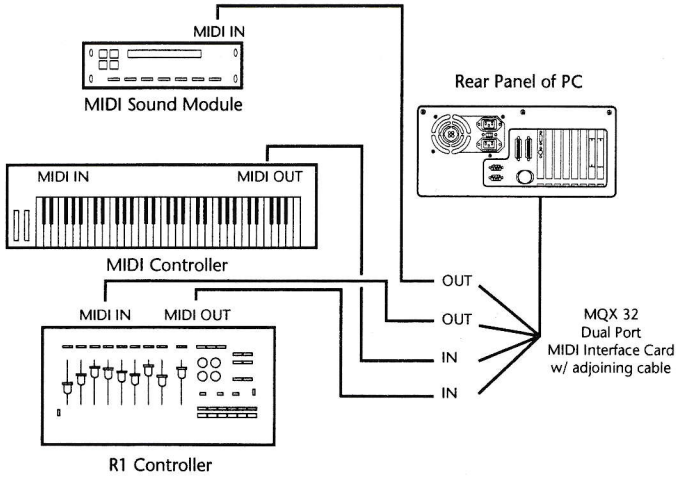
You can use Session 8 with a software-based MIDI sequencer and/or external MIDI devices such as the Digidesign R1 Remote Controller. For Session 8 to communicate with these devices, there are two types of MIDI connections involved—software and hardware:

1. **Software links between Session 8 and MIDI sequencers.** Here, communication between Session 8 and the sequencer takes place within the Windows software—no MIDI cables or hardware MIDI interfaces are involved. Session 8 communicates with MIDI sequencers using a custom Windows multimedia driver which we refer to as Session 8's *Internal Port.* To a sequencer, this looks just like another MIDI port. In fact, in your sequencer you will see the Internal Port listed as a MIDI device called "Session 8."

2. **Hardware links to external MIDI equipment.** To communicate with external MIDI hardware such as the Digidesign R1, MIDI cables and a Windows compatible MIDI interface are required.

If you plan to use both a MIDI sequencer to control MIDI sound modules *and* an external MIDI fader controller such as the Digidesign R1, you need two independent MIDI interface input and output ports. In this case, a Windows compatible multi-port MIDI interface such as the MQX-32 or Mark of the Unicorn MIDI Time Piece II™ is recommended.

Shown below is a basic system configuration for a multi-port MIDI interface. Your actual studio configuration may vary.



Multi-port MIDI interface cabling diagram

MIDI Interfaces and IRQs

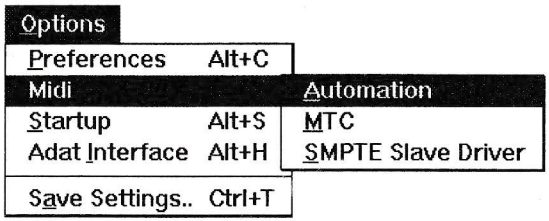
If you have trouble getting your PC MIDI interface to work properly, you should familiarize yourself with something called an *Interrupt Request Line*, or IRQ. IRQs are a way for a plug-in card in your PC (such as a MIDI interface) to tell the PC's processor to stop what it's doing and take care of something that can't wait (like reading incoming MIDI messages). If two cards are set to the same IRQ number, neither is likely to function properly.

MPU-401-compatible MIDI interfaces are normally shipped using IRQ2, although the better ones allow you to change this default setting. Some video cards, mice, tape backup controllers, network cards or other plug-in devices may also be set to use IRQ2. If you are having problems getting things to work, start by removing plug-in cards which are not required by Session 8 and see if the problem goes away. If the problem persists, you may have to change the IRQ setting on your MIDI Interface. See the documentation that came with your MIDI Interface for instructions on how to do this.

Remember that Session 8 also requires its own unique IRQ! For more information about IRQ conflicts and other hardware issues, please refer to Chapter B.

Using the *MIDI* Command to Configure Your MIDI Setup

Throughout this chapter, you will use Session 8's *MIDI* command (in the Options menu) to configure your studio's MIDI setup. The *MIDI* command has a "submenu" that allows you to configure three specific areas of your MIDI setup: *Automation, MIDI Time Code,* and if you own one, Digidesign's *SMPTE Slave Driver.* The next several sections of your User's Guide describes how to use the controls found in these dialogs.



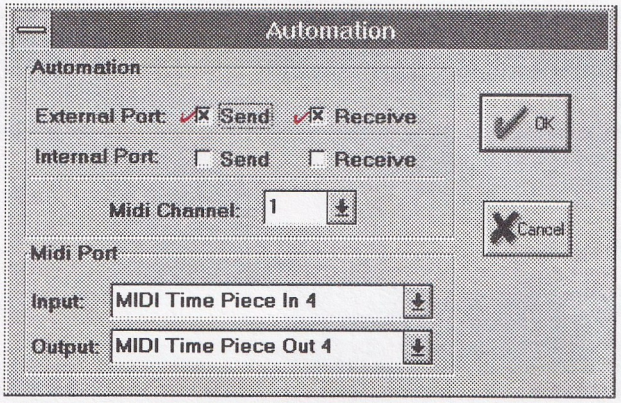
The MIDI menu item has a sub menu for configuring three different aspects of your MIDI setup

The dialogs that appear when you select the *Automation, MIDI Time Code,* or *SMPTE Slave Driver* commands allow you to set parameters that controls the flow of MIDI data in and out of Session 8. There are essentially two kinds of MIDI data Session 8 understands—*Automation* (MIDI continuous controller messages) and *Synchronization* (MIDI Time Code). Other MIDI data, such as Program Change or Note On/Off messages are ignored by Session 8. There are also two sources/destinations which Session 8 can send and receive MIDI from—an *external MIDI interface,* or a *Windows sequencer* running concurrently with Session 8 on your PC.

The Automation Dialog

The options in this dialog pertain to using a remote MIDI fader box or Windows sequencer to automate your mixes. This is accomplished by sending and receiving MIDI continuous controller data to and from Session 8. These messages are associated with each of the on-screen controls in the Mix window. Moving a fader will send a controller

message. If Session 8 receives the same message from an external source, the fader will be moved proportionally. The *Learn* button (described in Chapter I) is used to define the mapping of the on-screen faders to specific MIDI continuous controller messages.



The Automation Setup dialog

Automation Section

External Port:

The *External Port* refers to the hardware MIDI interface used by Session 8 for input and output of MIDI continuous controller and Time Code messages. If you have more than one MIDI interface installed in your system (or a multi-port MIDI interface), you could use separate ports for sending and receiving MIDI data.

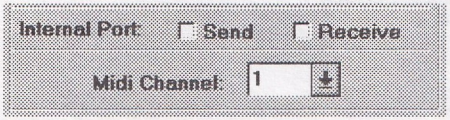
Send

Checking the *Send* box will cause MIDI continuous controller (automation) data to be sent out the selected output port when a fader is moved in the Mix window. This would be necessary if you are using an external MIDI device to record and playback Session 8 automation. You can choose which MIDI channel automation data is sent on with the *MIDI Channel* parameter, described below. It also allows Session 8 to communicate with the R1 controller if you are using one.

Receive

Use this option to read incoming MIDI messaged from the Digidesign R1 or other MIDI fader box. Checking the *Receive* box will cause Session 8 to respond to incoming continuous controller messages (automation) from the selected MIDI input port. When these messages are received, Session 8 will respond by moving the corresponding fader or knob in the Mix window. Only controller messages sent on the MIDI channel currently selected in the *MIDI Channel* item in this dialog will be used. Continuous controllers on MIDI channels other than the one selected here will be ignored, even if the *Receive* box is checked.

Internal Port



The *Internal Port* refers to the MIDI link between Session 8 and a Windows sequencer running concurrently on the same PC. If you aren't using a MIDI sequencer, these controls will have no effect. Furthermore, you must set your sequencer to use the *Session 8* device as a MIDI interface for the sequencer's input and output. This directs the sequencer to send and receive automation data to and from Session 8.

Send

Checking the *Send* box will cause MIDI continuous controller data to be sent to your Windows sequencer when a Session 8 on-screen fader is moved. You can choose which MIDI channel automation data is sent on with the *MIDI Channel* parameter, described below. Sending this data to a sequencer (and recording it on that sequencer) is the first step in creating an automated mixdown.

Receive

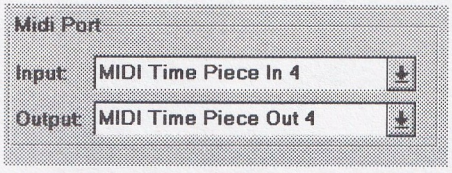
Use this control to receive fader moves from your Windows sequencer. Checking the *Receive* box will cause Session 8 to respond to incoming continuous controller messages sent by your Windows sequencer. When these messages are received, Session 8 will respond by moving the corresponding fader or knob in the Mix window. Only controller messages sent on the MIDI channel currently selected in the *MIDI Channel* item in this dialog will be used. Continuous controllers on MIDI channels other than the one selected here will be ignored, even if the *Receive* box is checked. Receiving this data from an external sequencer provides the capability for automated mixdown.

In order to successfully record automation with a Windows sequencer, you must also set your sequencer to send data back to Session 8. To so this, in your sequencer's MIDI setup dialog, set the sequencer to send MIDI data to the MIDI interface labeled as *"Session 8."* Later in this chapter you will find detailed instructions for how to set up both Session 8 and your sequencer to do this.

MIDI Channel

This drop-down menu sets the MIDI channel on which Session 8 will send and receive automation data (MIDI continuous controller messages). It should be set to the same channel your MIDI fader box is transmitting on. Alternately, this channel can be set to the track that your MIDI sequencer is recording and playing automation on. If you are using Digidesign's R1 controller, the channel is determined by your selection here.

MIDI Port Section



External Port

The *External Port* drop-down menu allows you to select which MIDI interface or Port on a multi-port interface will be used by Session 8 for Automation messages.

Input

Use this drop-down menu to select the desired MIDI Input port.

Output

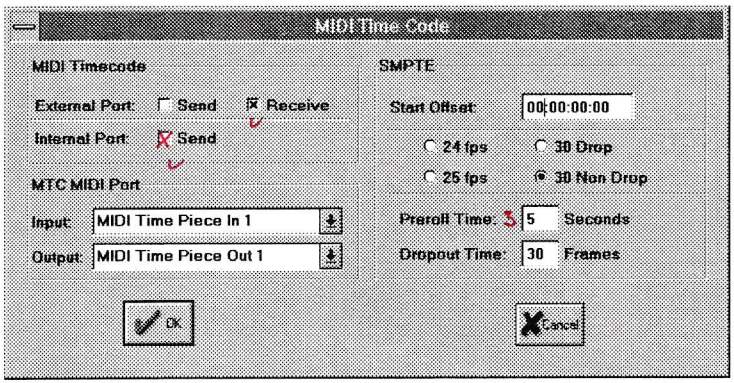
Use this drop-down menu to select the desired MIDI Output port.

NOTE: When you click either of these drop-down menus, you should see the name(s) of the MIDI interfaces installed in your PC. Viewing the MIDI input devices from your MIDI sequencer will show the same interfaces, but will also include Session 8. You must install the Windows MIDI device drivers provided with your MIDI interface before using this command, or the only choice in this menu will be "None."

MIDI Time Code Dialog

This dialog controls the sending and receiving of MIDI Time code to and from an external MIDI interface and to your Windows sequencer (via the *Internal port*). MIDI Time Code is used to synchronize Session 8 with a MIDI sequencer for mix automation and synchronized MIDI track playback by the sequencer. If your application requires it, Session 8 is capable of simultaneously being both slave and master, sending MTC through its Internal MIDI port while receiving it from its External port.

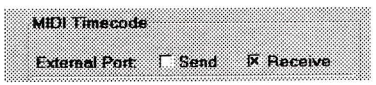
NOTE: If Session 8 appears to be unable to send MIDI Time Code, this can indicate an incorrect IRQ setting. For more about IRQs, see Chapter B.



The MIDI Time Code dialog

MIDI Timecode Section

External Port:



The *External Port* refers to the hardware MIDI interface used by Session 8 for MTC messages. Input and output could be directed to and from two different installed MIDI interfaces. The specific interface(s) through which MIDI data is communicated is determined by the setting in the *MTC MIDI Port* section of this dialog.

Send

Place a check in this box to send MTC out the selected MIDI port to an external sequencer (or other device that recognizes MTC). Session 8 will be the master, the external device will be the slave. Time Code will be sent whenever you record or play back Session 8. The frame rate of the MTC which is transmitted is described below.

Receive

Place a check in this box to receive MTC from the selected MTC MIDI port if you are synchronizing Session 8 to an external sequencer or other device. Session 8 will be the slave, the external device will be the master. Checking the Receive box will cause Session 8 to read incoming MIDI Time Code messages from the selected MTC MIDI input port MIDI interface. The incoming frame rate of the MTC must match the Session 8 frame rate, described below.

NOTE: Unless you are using Digidesign's optional SMPTE Slave Driver™, Session 8 will "freewheel" sync to the external source (see page 213 for details.) This means that over time, Session 8 may drift out of sync with the external master source. This is because, although both system begin playback at exactly the same spot, they are each running off their own internal clocks (or motor speed controls). Even the slightest discrepancy in playback speed between the two may eventually become apparent. Digidesign's SMPTE Slave Driver solves this problem by continuously re-synchronizing Session 8 to the external SMPTE source, keeping the two exactly locked at all times.

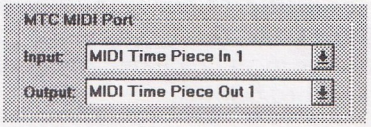
Internal Port

The *Internal Port* refers to the MIDI link between Session 8 and a Windows sequencer running concurrently on the same PC. The *Internal port* is a software link which uses the Session 8 MIDI device driver as a path between MIDI applications. If you aren't using a MIDI sequencer, these controls will have no effect. Furthermore, you must set your external sequencer to use the *Session 8* device as a source of MIDI input so the sequencer can receive automation and synchronization information from Session 8. You'll notice that there is only a *Send* check box in the *Internal Port* section. This is because Session 8 can send, but not receive MIDI Time Code from a Windows sequencer.

Send

Check this box to send MTC via Session 8's Internal port to a Windows sequencer. Session 8 will be the master, the external device will be the slave. MTC will be sent whenever you record or play audio with Session 8. If the sequencer is set to sync to MTC coming from Session 8, it will play in time with Session 8's digital audio. The frame rate of the MTC which is transmitted is described below.

MTC MIDI Port Section



The *MTC MIDI Port* section of this dialog allows you to select which Port on a multi-port interface will be used by Session 8 for MIDI Time Code (synchronization) messages.

Input

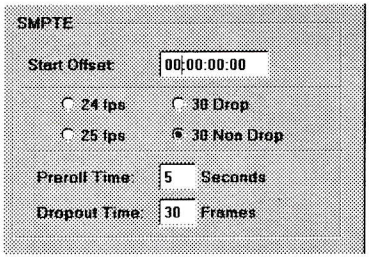
Use this drop-down menu to select the desired MIDI Input port.

Output

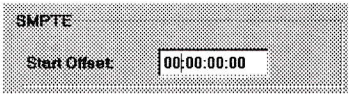
Use this drop-down menu to select the desired MIDI Output port.

NOTE: When you click this either of these drop-down menus, you should see the name(s) of the MIDI interfaces installed in your PC. Viewing this same list of interfaces from your MIDI sequencer will show the same interfaces, but will also include Session 8. You must install the Windows MIDI device drivers provided with your MIDI interface before using this command, or the only choice in this menu will be "None."

SMPTE Section



Start Offset



The SMPTE Start Offset value in the MIDI Setup dialog determines the SMPTE time that Session 8 will begin audio playback. For example, if you set a SMPTE Start Offset of 00:00:10:00 (10 seconds) Session 8 will begin playing when it receives an incoming MTC value of ten seconds.

The ability to enter different *SMPTE Start Offset* values is useful if you have a multitrack tape striped with SMPTE that has many songs, each with a different SMPTE Start Offset. For example, if song number 2 starts at one hour and three minutes (01:03:00.00), enter this into the SMPTE Start Offset of the Session 8 MIDI Setup dialog and Session 8 will begin playing when it receives this SMPTE time.

NOTE: If you select a Send MTC option (either Internal or External) the MTC time that will be sent at the beginning of the song will be the time that you have entered in the SMPTE Start Offset section of the MIDI Time Code dialog.

SMPTE Frame Rates

The Session 8 supports four different formats of SMPTE time code: 30 frames per second (FPS) non-drop, 30 FPS drop-frame, 25 FPS non-drop, and 24 FPS non-drop. Since MIDI Time Code is derived directly from SMPTE, MIDI Time Code shares the same frame rates.

The 30 frame non-drop format is based on a frame rate of 30 frames per second. This is the original SMPTE format developed for monochrome (black and white) video.

The 30 drop-frame format was developed for use with color video, and has an actual frame rate of 29.97 frames per second. This slight deviation from the standard 30 frames/second rate causes synchronization inaccuracies to accumulate, resulting in ever-increasing time offset the longer a source plays. To compensate for this discrepancy in frame rates, the first two frames of each minute are "dropped" (omitted) with the exception of every 10th minute. This results in 108 frames being dropped every each hour, exactly the number required to avoid accumulation error (and reflect true "wall clock" in the time code clock values).

NOTE: Session 8's 30 Drop frame rate actually runs at 29.97 frames per second. This is to conform to other PC sequencer software such as Passport's Pro4™ which also gives you 30 Drop frame rate as an option, though they really mean 29.97 Drop frame. Thus, when you use internal MIDI time code to link Session 8 to another Windows MIDI sequencer, and use 30 drop as the format, choose the 30 Drop option in both programs.

IMPORTANT

If you are synchronizing Session 8 to an external sync source (such as Digidesign's SMPTE Slave Driver) that supports both 30 drop frame and 29.97 (non drop), choose the 29.97 drop frame on that device to match Session 8's 30 drop frame setting.

The 25 frame non-drop (EBU) format is very similar to the 30 frame non-drop format, but is based on a frame rate of 25 frames/second. This format is also called the EBU (European Broadcast Union) format because it's used by broadcasters throughout Europe (where alternating current rates are 50 cycles/second instead of 60 cycles/second).

The 24 frame non-drop format is used exclusively for film applications. Film is often photographed and projected at a rate of 24 frames per second, so this SMPTE format is useful when one time code frame should equal one film frame.

NOTE: The SMPTE time code formats used by all devices must match. Different devices should not have different frame rates. The Frame Rate will also affect the behavior of Grid Mode when SMPTE is chosen as the Grid Reference. In that situation, Regions will snap to the beginning of frames. The actual number of frames per second can be set here.

Preroll Time

The *Preroll Time* control allows you to adjust the amount of time (in seconds) that you wish to give Session 8 to accurately sync up to time code and begin playback or recording, once it begins to receive a time code signal. Earlier versions of the Session 8 software automatically waited 5 seconds before attempting hard disk playback or recording once time code was received. This was because certain hard drives were simply not fast enough to accurately begin playback without a sufficient amount of time to "catch up" to the sync signal. With the advent of faster hard drives, it is possible to decrease this lag time. If you have a sufficiently fast hard drive, you can set this number to a value less than 5. A very fast hard drive may be able to accurately synchronize playback even if set to zero. If you have a slow hard drive, you may wish to leave it at its default value of 5 seconds.

Dropout Time

The *Dropout Time* control allows you to protect against errors that may occur in your Session if your source of time code has "drop outs" (periodically becomes unreadable by your MIDI Interface). Entering a number here allows Session 8 to "freewheel" (continue playback at its own internal clock rate) for the chosen number of frames over any areas of bad time code that it receives while synchronized. If the time code dropout lasts for more than the specified number of frames, Session 8 will stop playback.

Using the R1 Controller with Session 8

Digidesign's R1 controller provides you with a tactile control surface for hands-on use of Session 8's faders, transport, rotary controls and other functions.

Setting up the R1

If you have purchased the R1 for use with your Session 8 system, refer to its User's Guide for complete instructions for installing it and using it with the Session 8. However, if you have set up the R1 according to the directions and it still does not appear to be communicating with Session 8, check your MIDI connections and make sure that Automation *Send* and *Receive* are enabled in Session 8's MIDI setup dialog for your external MIDI interface, and that the IN and OUT of the R1 are connected to the OUT and IN of the MIDI interface specified in the *Automation* Dialog. Once you have done this, turn on the R1. If it is already on, switch it off and then on again.

NOTE: When you are using the R1 with Session 8 on a PC, use the "P.C." position for the R1's power switch.

When the MIDI Setup is saved, Session 8 will look for an R1 unit whenever you launch the software. If the R1 is off when the software is launched, the Session 8 software will still recognize the R1 when you turn it on.

IMPORTANT

If you have been using a previous version of the Session 8 software with another MIDI controller and had a MIDI map saved for that MIDI controller, your old MIDI mapping will be overwritten if you use Session 8's *Save Settings* command with an R1 unit connected. If you wish to retain your old MIDI mapping, you must back up the old *Session8.ini* file found in the Windows directory.

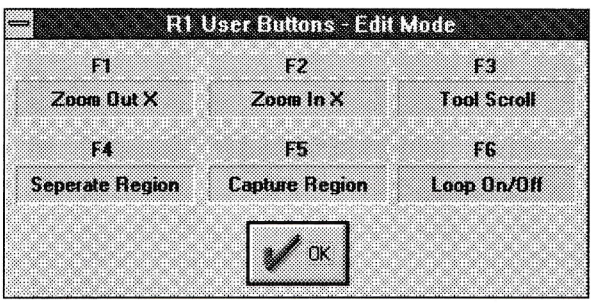
If you wish to use the R1 as a general purpose MIDI controller with an application other than Session 8, you must first initialize it so that it doesn't default to its pre-programmed settings.

To initialize the R1:

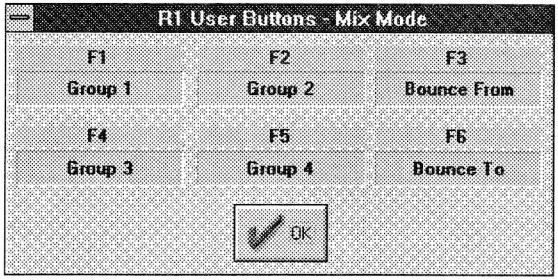
- Make sure the Session 8 software is not running.
- Turn on the R1 while holding down all five of its mode buttons (mute, solo, EQ, sends, and pan). The R1 will stay in its generic MIDI controller operation mode until you set it up again with the Session 8.

Because the Session 8 software now supports the R1 Controller, some adjustments have been made to Session 8's MIDI Controller Map for faders, sends, etc. To find out about this enhanced MIDI Map, look on the Session 8 Master Disk for a file called MIDIMAP.TXT. This text file lists the MIDI controller mapping for the Session 8 software, as well as the generic MIDI output mapping for the R1 Unit.

The Session 8 software's *R1 User Buttons* command also provides you with a quick reference for the R1's function key definitions, and how they differ when you are in Session 8's Edit or Mix window.



The R1 User Buttons dialog as it appears when you are in the Edit window



The R1 User Buttons dialog as it appears when you are in the Mix window

Synchronizing a MIDI Sequencer to Session 8

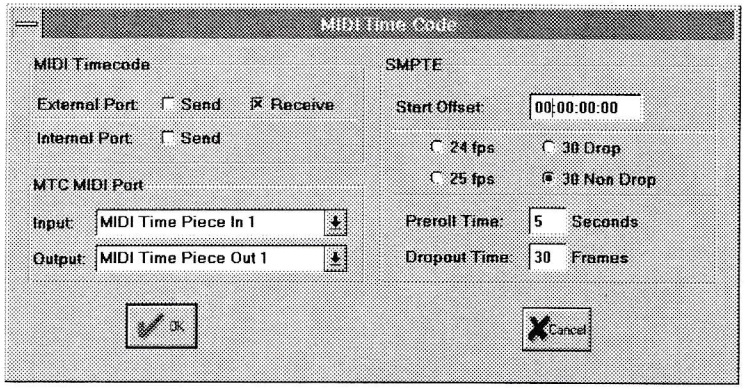
By synchronizing Session 8 to a MIDI sequencer, you can add MIDI tracks to your music projects. In fact, if your studio is heavily MIDI-equipped, you may wish to actually begin your session by laying down your rhythm tracks with your MIDI sequencer and then add digital audio tracks with Session 8. The following section describes how to set up Session 8 and a Windows MIDI sequencer to communicate with each other in real time.

Once your Session 8 system is configured to communicate with a Windows MIDI sequencer (described previously), you will be able to begin playback play from Session 8 (at any point in the song) and have your MIDI sequencer play along in sync. In this case, Session 8 will be the *master*, meaning that it will provide the MIDI Time Code clock source which the sequencer will follow. This is the required configuration for synchronizing to a sequencer—Session 8 must act as the master and your Windows sequencer as the *slave*.

NOTE: Using a MIDI sequencer concurrently with Session 8 will use a significant amount of your PC's RAM. If you plan to do this, you will probably want to install more than 4 megabytes of RAM in your system.

To configure the Session 8 software to synchronize with a MIDI sequencer:

- Choose the *MIDI* command from the *Options* menu. From the submenu, choose *MIDI Time Code*. The *MIDI Time Code* dialog appears.



The MIDI Time Code dialog

- Under *MIDI Timecode*, place a check in the *Send* box next to *Internal Port*. This causes Session 8 to send MTC to the sequencer via the Internal Port driver.
- Choose an appropriate SMPTE/MTC frame rate (30 non-drop is the default). Make sure this setting matches the corresponding settings in your sequencer.
- If desired, set a SMPTE Start Offset. The time that you enter here will determine the SMPTE frame number at which playback begins. The value that you enter as Session 8's SMPTE Start Offset must not be later than a SMPTE Start Offset set in your sequencer.
- If you're controlling an external device that needs MIDI time code (such as a second *external* MIDI sequencer) place a check in the *Send* box next to *External Port*. If you're just synchronizing with a Windows sequencer, leave the External Port's *Send* option off.
- If you're slaving Session 8 to Digidesign's SMPTE Slave Driver or other external MTC-generating device, place a check in the External Port's *Receive* box. Otherwise, leave it off.
- Click *OK*.

The exact steps you must take to properly configure your sequencer for use with Session 8 will vary from program to program. Therefore, the following instructions are somewhat general when describing the steps to follow in your sequencer. You will find more specific information on using Session 8 with 12 Tone System's *Cakewalk Professional*, Steinberg-Jones' *Cubase*, and Passport Design's *Master Tracks Pro 4* after this section.

To Configure Your Windows Sequencer:

- Turn off *MIDI Thru* (the location of this option varies depending on which sequencer you use)
- Choose *MIDI Setup* or *Synchronization* options in the sequencer. The actual name of this command may vary depending on which sequencer you use.
- Set the sequencer's clock source to *MTC* or *MIDI*.
- Choose *Session 8* as the sync source or MIDI receive port.
- Choose a SMPTE frame rate that matches the one you set in Session 8. Unless you have other requirements, 30 non-drop is the Session 8 default.
- If desired, set a SMPTE Start Offset. The time that you enter here will determine the SMPTE frame number at which playback of the sequence begins. The value that you enter as the sequencer's SMPTE Start Offset should either match or be later than the SMPTE Start Offset you set in Session 8.
- In some sequencing programs (such as Cakewalk Professional), you may need to hit *Play* on the sequencer's transport before leaving the sequencer. The sequencer will usually respond with a message such as "waiting for time code," which means it is waiting for Session 8 to tell it to begin playback.
- Go back to Session 8 (do NOT quit the sequencer!).
- Hit *Play* in Session 8 to begin synchronized playback. Your sequencer should begin synchronized playback at the designated start time.

Once synchronized playback is operating correctly, you can record new takes in Session 8 while listening to your MIDI tracks play from your sequencer. Simply follow the procedure described above for synchronized playback, and then record new material in Session 8 by following the steps outlined in the *Recording* section of this manual.

Recording MIDI Tracks While Synchronized

Depending on the capabilities of your Windows sequencer, you should be able to record new MIDI tracks while the sequencer is slaved to Session 8. See your sequencer manual for details on recording while the sequencer is in an external synchronization mode.

Sequencer-Specific MIDI Time Code Configurations

The following section provides basic information on configuring three popular Windows MIDI sequencers to communicate with Session 8 for synchronized playback of a MIDI sequence in conjunction with Session 8 tracks. For settings required to use a Windows sequencer for recording and playing mix automation for Session 8, see the section of Chapter I, entitled *"Sequencer Specific Automation Configurations."*

This information is provided for your convenience. It is not intended to replace your sequencer's manual. For more detailed information, consult your sequencer's manual or call the manufacturer for technical support.

Configuring Steinberg's Cubase

- In Cubase's *Options* menu, choose the *Synchronization* command. Under Sync Source, set Timebase to *MTC*, and set the Sync Source to *Session 8*.
- Make sure that the *Sync* button on the Cubase transport bar is engaged.

NOTE: Make sure Cubase is using the same SMPTE format as Session 8.

Configuring 12 Tone Systems' Cakewalk Professional

- From the *Settings* menu, choose the *MIDI Devices* command.
- Set one of the input ports to *Session 8*. This allows Cakewalk to receive MTC from Session 8.
- From the *Settings* menu, choose the *Clock* command. Set the clock to *SMPTE/MTC*.
- Press the Play button. Cakewalk will tell you what format of SMPTE Time Code it is expecting. When it receives MTC from Session 8, it will automatically begin playback.

NOTE: Make sure Cakewalk Professional is using the same SMPTE format as Session 8. This is set by clicking the SMPTE format text field on the far left of Cakewalk Pro's transport bar.

Configuring Passport Designs' PRO 4

PRO 4's MIDI and synchronization settings can be found in the *Goodies* menu under the *MIDI Setup* command.

- Set Pro 4's *Sync Port* to *Session 8*.
- Choose MIDI Time Code as PRO 4's Sync Source.

Synchronizing External Devices to Session 8 with MIDI Time Code

Session 8 can generate MIDI Time Code and send it to an external device, allowing Session 8 to act as the Master and the external device as the Slave.

To Sync an external device to Session 8 via MTC:

- In the MIDI Time Code dialog, place a check in the External Port's *Send* box. This will cause MTC to be sent out the external port during Session 8 playback.
- Connect the output of your selected MTC MIDI output port to the MIDI input of the external device.
- Set the external device to sync to incoming MTC. Make sure this device and Session 8 are both set to the same SMPTE frame rate. (Select Session 8's SMPTE frame rate in the MIDI Time Code dialog in the Options menu.)
- Start playback of Session 8. The external device should begin synchronized playback.

Synchronizing Session 8 and External Devices with SMPTE

Session 8 can be synchronized to an external SMPTE-generating device for both playback and recording. The most common application for this is to use Session 8 with an analog multitrack tape recorder. This would allow you to use all of Session 8's random-access digital audio tracks in addition to the tracks on your existing analog machine. When synchronized, Session 8 will automatically start playback in time with the multitrack recorder.

The first step in synchronization with an external deck is to record a reference tone containing timing information called "SMPTE time code" on one analog tape track. SMPTE (Society of Motion Picture and Television Engineers) time code is a running "clock" in the form of a digital data stream that can be recorded on magnetic tape as an audio signal.

This SMPTE track will be master timing reference for Session 8. But first, it must be converted into something Session 8 can understand. Session 8 synchronizes to SMPTE time code by reading MIDI Time Code (MTC) that is generated from the multitrack's SMPTE. MTC is created by a SMPTE-to-MIDI time code converter. This device may be a separate unit, or a built-in function of your MIDI interface.

Types of Synchronization

There are two different techniques for synchronizing Session 8 to a multitrack—freewheeling and continuous re-synchronization. Both require a SMPTE track on the tape deck and a SMPTE to MTC converter so Session 8 can keep track of the deck's current playback time. Both begin the same way: When the tape recorder begins playing, SMPTE time code is read from tape and converted to MIDI Time Code. This continuously running time reference is read by Session 8, which begins playing when the time code value matching the *SMPTE Start Offset* setting in the Session 8 MIDI Setup dialog is reached.

Here's where the two sync techniques diverge. With freewheel sync, Session 8 begins its playback exactly in time with the multitrack. However, once Session 8 starts playing, it does not refer to the incoming MTC signal. Instead, it coasts along on its own internal clock, hence the term "freewheeling." If the tape deck is running slightly faster or slower than Session 8, the two will eventually diverge. Depending on your application, this may not be acceptable.

By using the Digidesign SMPTE Slave Driver (available separately), Session 8 can remain exactly in time with your multitrack, even if the tape deck speeds up or slows down significantly. The SMPTE Slave Driver reads SMPTE from tape and generates MTC for Session 8. Then it goes one step further and generates a *digital clock* signal which is referenced to the original time code. This clock replaces Session 8's internal time-keeping and guarantees that the two remain in sync throughout playback.

The following section describes step by step instructions for using both types of synchronization.

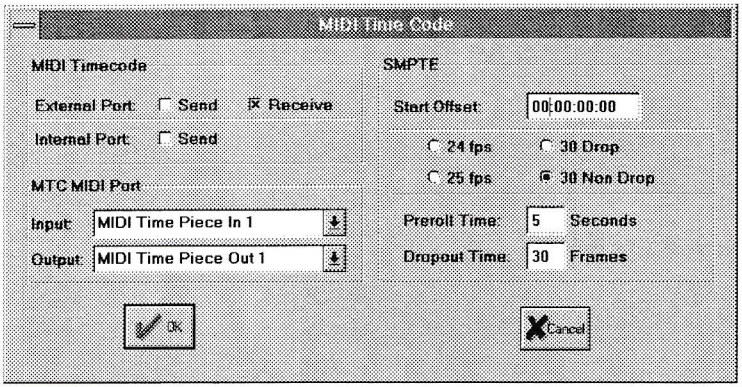
NOTE: If you are using external sync and a MIDI fader controller such as the R1 simultaneously, MTC and the R1 must come in on the same MIDI interface, combined through an external MIDI Merger if necessary.

Synchronizing Session 8 via SMPTE trigger and MTC (freewheeling)

In this configuration, Session 8 playback is triggered by an external time code source. Session 8 will chase and start (or stop) playback and recording while slaved to other systems. However, in this type of trigger situation, once playback or recording starts there is no further synchronization, and Session 8 will play back at a rate determined by the Audio Interface's internal clock. This means that over time, Session 8 may drift out of sync with the external master MTC/SMPTE source!

To Trigger Session 8 Playback/Recording with SMPTE:

- Choose the *MIDI* command from the *Options* menu. From the submenu, choose *MIDI Time Code*. The *MIDI Time Code* dialog appears.



The MIDI Time Code dialog

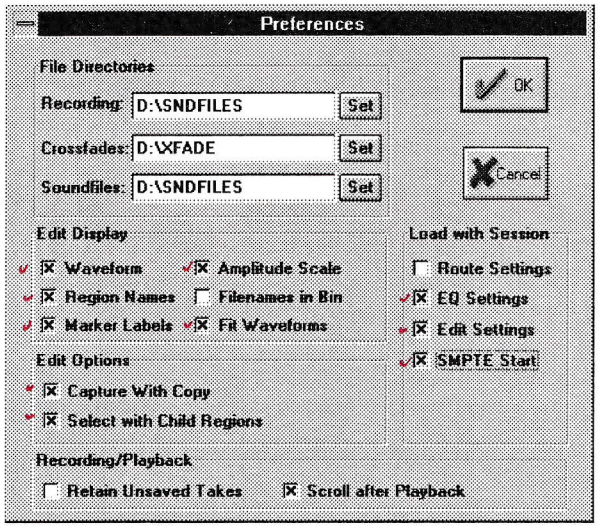
- Under *MIDI Timecode,* place a check in the *Receive* box next to *External Port.* This causes Session 8 to receive from the external device.
- Choose an appropriate SMPTE frame rate that matches that of the SMPTE tape track.
- If desired, set a SMPTE Start Offset. The time that you enter here will determine the SMPTE frame number at which playback begins.
- Set the Session 8's Time Line to *SMPTE* time code display. (Click the right mouse button in the area above the tracks in the Edit window and choose *SMPTE.)*
- Click *OK.*
- Begin playback on your external deck. Session 8 audio playback will begin when it sees the frame number entered in the *SMPTE Start Offset* section of the MIDI Setup dialog.

Save SMPTE Start Offset with Session Option

Session 8 allows you to save an individual SMPTE Start Offset for each session, and as a Global parameter. If you are saving SMPTE Start Offsets in your Sessions, you'll want to load these settings with the Session and disregard the Global settings.

To Load SMPTE Start Offset as part of a session:

- Choose the *Preferences* command from the Options menu. This dialog appears:



The Preferences dialog with the SMPTE Start option at the bottom right

- In the *Load with Session* portion of this dialog, click and place a check in the *SMPTE Start* box. From this point on, any SMPTE Start Offset you have saved with a Session will be loaded when you open a Session.

Using the SMPTE Slave Driver

For more accurate synchronization, a better alternative to freewheeling exists. This technique uses SMPTE Trigger, but maintains long-term synchronization by using the SMPTE Slave Driver, available separately from Digidesign.

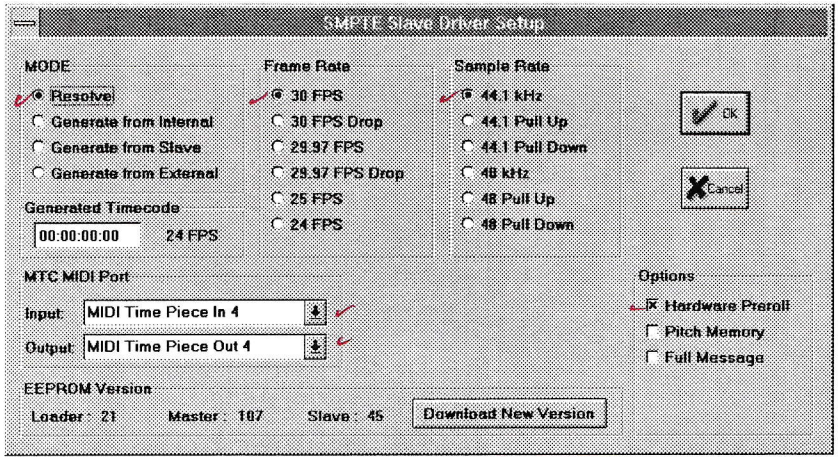
The SMPTE Slave Driver is a peripheral device for Digidesign digital recording systems which allows you to control Session 8's recording and playback clock from an external

SMPTE signal. The SMPTE Slave Driver accepts a SMPTE signal and then converts it into a master clock signal, which it sends to the Audio Interface. By precisely tracking any fluctuations in the speed of the incoming SMPTE and adjusting its digital clock output to compensate for these changes, the SMPTE Slave Driver ensures that your Session 8 plays at exactly the same speed as the tape, thereby staying in sync. In such a system, if the tape deck begins to slow down, the Session 8 will slow down right along with it. Even after many minutes, they will still be locked to each other, because the current master SMPTE time is mirrored by the slaved Session 8.

The next sections of your User's Guide provide a general procedure for synchronizing Session 8 using the SMPTE Slave Driver. If you require more specific instructions, refer to your SMPTE Slave Driver's User's Guide.

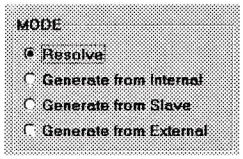
The SMPTE Slave Driver Setup Dialog

The *SMPTE Slave Driver* setup dialog allows you to set the parameters of your SMPTE Slave Driver in order to use it for synchronization purposes. The controls found in this dialog are explained below.



The SMPTE Slave Driver Setup dialog (in the Options menu)

Mode



The controls found in this section of the *SMPTE Slave Driver* dialog allow you to select one of four possible operating modes for the SMPTE Slave Driver. These modes are as follows:

Resolve

In *Resolve* Mode the SMPTE Slave Driver resolves to the frame rate of the incoming Longitudinal Time Code (LTC).

Generate from Internal

In *Generate from Internal Mode,* the SMPTE Slave Driver is referenced to its own internal crystal oscillator. In this mode, LTC and MTC are generated with the internal crystal oscillator as a timebase.

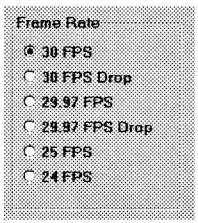
Generate from Slave

In *Generate from Slave Mode,* the SMPTE Slave Driver is referenced to its Slave Clock input. LTC and MTC are generated with the Slave Clock input as a timebase. This mode allows you to connect a Digidesign Video Slave Driver™ to create a video-referenced LTC/MTC generator.

Generate from External

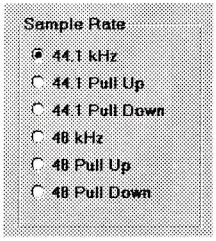
In *Generate from External Mode,* the SMPTE Slave Driver is referenced to its External Clock input. This mode allows the SMPTE Slave Driver to operate as a Word Clock-referenced LTC/MTC generator. LTC and MTC are generated with the External Clock input as a timebase.

Frame Rate



The controls found in this section of the *SMPTE Slave Driver* dialog allow you to select one of six possible SMPTE frame rates for the SMPTE Slave Driver. These rates are explained earlier in this chapter on page 228.

Sample Rate



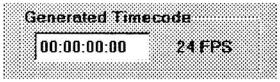
The controls found in this section of the *SMPTE Slave Driver* dialog allow you to select one of six possible output sample rates. The *Pull Up* and *Pull Down* sample rates found in this dialog are used in film and video applications when it is necessary to deliberately "miscalibrate" the audio sample rate clock (and thus the pitch of the audio) in order to compensate for a speed change elsewhere in the production chain. The usual situation in which these rates are encountered is when film footage (at 24 fps) is transferred to color video tape (at 29.97 fps).

For a more detailed explanation of Pull Up and Pull Down Rates, please refer to your SMPTE Slave Driver User's Guide.

The six sample rates available in this dialog are:

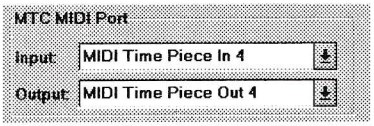
- 44.1 kHz
- 44.1 Pull Up
- 44.1 Pull Down
- 48 kHz
- 48 Pull Up
- 48 Pull Down

Generated Time Code



This section of the dialog indicates the SMPTE frame rate and frame number currently being generated by the SMPTE Slave Driver.

MTC MIDI Port



The drop-down menus in this section of the dialog allow you to select the MIDI Interface or port on a multi-port interface which will be used by Session 8 for synchronization. The settings that you choose here are identical those in the MIDI Time Code dialog. Whatever devices you choose here will automatically be set in the MIDI Time Code dialog as well (and vice-versa). When you click either of these drop-down menus, you should see the name(s) of the MIDI interfaces installed in your PC. You must install the Windows MIDI device drivers provided with your MIDI interface before using this command, or the only choice in this menu will be *"None."*

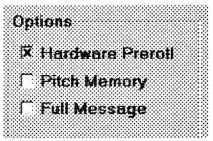
Input

Use this drop-down menu to select the desired MIDI Input port.

Output

Use this drop-down menu to select the desired MIDI Output port.

Options



These controls allow you to turn on or off a number of the SMPTE Slave Driver's synchronization features:

Hardware Preroll

Placing a check in this box will force the SMPTE Slave Driver to wait until it has accurately locked itself to incoming time code before its sends MTC to the Session 8. If this option is not selected, the SMPTE Slave Driver will simply function as a MIDI Time Code converter and begin sending MTC to Session 8 as soon as it begins receiving time code.

Pitch Memory

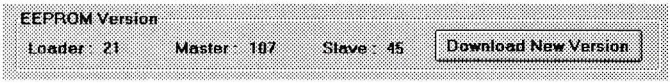
Pitch Memory is a feature that allows the SMPTE Slave Driver to remain at the last known pitch (the last incoming SMPTE speed) even when the external sync

source (such as a tape deck) is stopped. If you are using the varispeed function on an tape deck and synchronizing Session 8 to that deck, this feature allows your Session 8 to stay "in tune" if you wish to edit while the SMPTE source is stopped. Turning off Pitch Memory causes the SMPTE Slave Driver to return to the selected sample rate while the external sync source is stopped.

Full Message

This option allows you to control whether or not the SMPTE Slave Driver sends an MTC "full message" (a type of MIDI message which includes precise time location information) after it has begun to receive SMPTE. Some MIDI Interfaces and applications need to receive this type of MIDI message in order to function correctly. To find out if your MIDI devices do, please consult that documentation that came with the device.

EEPROM Version



Digidesign periodically updates certain products such as the SMPTE Slave Driver. This section of the SMPTE Slave Driver dialog indicates the current version of the SMPTE Slave Driver's internal "firmware" and allows you to load a newer version if necessary with the *Download New Version* button. Clicking the download New Version button loads the current version of firmware into your SMPTE Slave Driver.

To connect the SMPTE Slave Driver to Session 8:

- Set the *Sys Ex* switch on the back of the SMPTE Slave Driver to *MIDI Input.*
- Connect the *MIDI Out* of the SMPTE Slave Driver to an available *MIDI In* port of your MIDI interface. This port should be the port that you wish to use as your MIDI Time Code In port.
- Connect the MIDI In of the SMPTE Slave Driver to an available MIDI Out port of your MIDI Interface.
- Connect the SMPTE Slave Driver's *Slave Clock Output* port to the Session 8 Audio Interface's *Slave Clock In* port.
- Connect the SMPTE output of your tape deck to the SMPTE In of the SMPTE Slave Driver.

To Synchronize Session 8 using the SMPTE Slave Driver:

- Choose the *MIDI* command from Session 8's Options menu, and in the submenu, choose *SMPTE Slave Driver*. The SMPTE Slave Driver dialog appears.
- In the Mode section of this dialog, set the SMPTE Slave Driver to *Resolve*.
- Choose the SMPTE frame rate that matches that of the external SMPTE-generating device (such as a tape deck).
- Choose the sample rate appropriate to your Session. (Session 8's default is 44.1 kHz.)
- In the MTC MIDI Port section of this dialog, choose the appropriate Input and Output MIDI Ports that you have connected to the SMPTE Slave Driver.
- In the Options section of this dialog, enable any SMPTE Slave Driver options that you wish to use.
- Click *OK* to close this dialog.
- Next, choose the *MIDI* command from the Options menu again, and in the submenu, choose *MIDI Time Code*.
- In the MIDI Time Code dialog that appears, set the *External Port* to *Receive*.
- Choose the SMPTE frame rate that matches that the one you chose in the SMPTE Slave Driver dialog.
- If necessary, choose a SMPTE Start Offset.
- Click OK to close this dialog.
- Set the Session 8's Time Line to *SMPTE* time code display. (Click the right mouse button in the area above the tracks in the Edit window and choose *SMPTE.)* This will set your Session's time display format to SMPTE time.
- Begin playback on your external deck. Session 8 audio playback will begin when it sees the frame number entered in the *SMPTE Start Offset* section of the MIDI Time Code dialog.

You should now hear your instrument and the output from the effect unit in the stereo mix.

- Set the input/return faders connected to your instrument and the outputs of your effects unit to *Bounce From.*
- Set an unused Track to *Bounce To.*
- Make any final level adjustments your Input/Return fader and effect send levels, and record the bounce.

Effects will be added to the recorded take in whatever proportion they were set during the bounce.

Automating Mixdown with a MIDI Sequencer

Mixing is a very exacting art. It requires that requires you to be all hands and ears as you listen to the playback and adjust fader levels, panning, and effects to achieve the optimum final mix. To aid in the mixdown process, automated mixing technology has become a standard feature of many professional recording systems. Your Session 8 system provides you with a means of automating your final mixdown too—via Windows-compatible MIDI sequencing software.

Because the Session 8 can communicate with sequencing software such as Cakewalk Professional, Cubase, and MasterTracks Pro 4, it allows you to create a very precise MIDI-controlled automated mixdown. By recording your fader moves into a sequencer, you can automate fader movements, dynamic panning, effects levels, and more.

To learn the basics on how to configure your Session 8 system to work with MIDI, and automate your final mixes with one of these Windows-compatible sequencers, please refer to Chapter H: *MIDI and Synchronization.* That chapter also contains essential information about synchronizing playback and recording of Session 8 tracks to SMPTE and MIDI tracks.

Automating a Session 8 Mixdown with a MIDI Sequencer

The process for automating a Session 8 mixdown with a Windows MIDI sequencer is a two part process. First, the movement of the Mix window's controls are recorded into your sequencer. Then, during playback, these messages are sent from the Sequencer to Session 8, causing the controls in the Mix window to repeat the moves you made in each section of your song. This allows you to automate precise mixdowns and recall them at any time.

You can also record automation data from an external MIDI Controller by recording from the controller directly into your sequencer and then playing back the sequence into Session 8.

To configure Session 8 for automated mixdown:

- Choose the *MIDI* command from Session 8's Options menu, and in the submenu, choose *MIDI Time Code*. The MIDI Time Code dialog appears.
- In this dialog, enter the settings recommended for synchronized MIDI sequencer playback (refer to pages 232-233).
- Click *OK* to close this dialog.
- Choose the *MIDI* command from Session 8's Options menu once again, and in the submenu, choose *Automation*. The Automation dialog appears.
- If you are using an external controller, click the *Receive* check box next to *External Port*. This allows Session 8 to receive MIDI continuous controller data from the controller.
- Click the *Send* check box next to *Internal Port*. This causes Session 8 to send MIDI continuous controller data to your sequencer.
- Click the *Receive* button also next to *Internal Port* (this allows Session 8 to get automation data back after it has been recorded in the sequencer).
- Choose the *MIDI channel* that you want to receive from. This should match the MIDI channel your sequencer automation tracks will play back on.
- Click *OK* to close this dialog.

To configure your sequencer to record automation data from Session 8:

In your Sequencer, follow the procedures described previously for setting up synchronized MIDI sequencer playback (refer to page 232-233). Then:

- In the sequencer, make sure Session 8 is selected as a MIDI input device and/or sync input device.
- Choose a MIDI track that you want to record the automation data on in your sequencer. When you play back the sequencer's automation data, the MIDI channel output for that track should match the one specified in Session 8's Automation dialog. Make sure that MIDI continuous controller data is NOT being filtered by your sequencer during recording. Make sure that all continuous controllers are being recorded by your sequencer.

NOTE: Controller data filtering options usually appear as Recording options under a several different names depending on which sequencer you are using. Typically, your sequencer will display a list of MIDI messages such as key pressure, pitch bend, aftertouch, and pitch wheel, that can be either recorded or ignored as you record.

To record faders moves in your sequencer:

- Put the sequencer into *Record*. Make sure its clock source is set to *MTC* and is receiving MIDI input (including sync or MTC data) from Session 8 (via the *Internal Port*). You should see a message such as "waiting for time code." The sequencer won't actually begin recording until Session 8 starts to play.
- Go into Session 8 and hit *Play*. The sequencer should start rolling and recording. Move faders and perform your mix as desired.
- When you're finished, hit *Stop* in Session 8. You may wish to save the take in your sequencer.

To replay the automation:

- Make sure your sequencer is still set for MTC sync.
- Hit *Play* in Session 8 and the sequencer should play back your fader moves in sync.

IMPORTANT

CAUTION: Do not enable *MIDI Thru* on your sequencer for the track(s) that are recording Session 8 automation data. In certain cases, this may cause a MIDI loop, which could cause your system to lock up.

Sequencer-Specific Automation Configurations

The following section provides basic information on configuring three popular Windows MIDI sequencers for MIDI controlled automation with Session 8. This information is provided for your convenience. It is not intended to replace your sequencer's manual. For more detailed information, consult your sequencer's manual or call the manufacturer for technical support.

Configuring Steinberg/Jones' Cubase

- In Cubase's *Arrange* window, set the output for the track on which you are recording the Session 8 automation to *Session 8*.
- From the *Options* menu, choose the *MIDI Setup* command.
- In this dialog, click on *Inputs Enable* and make sure that Session 8 is checked. This allows Cubase to record automation from Session 8.
- For playback, make sure that individual track outputs are assigned to "Session 8."
- Make sure your MIDI output channel setting on the track you're recording matches Session 8's MIDI channel setting (in the *Automation* dialog).

Configuring 12 Tone Systems' Cakewalk Professional

- Choose the *MIDI Devices* command from the *Settings* menu.
- In this dialog, make sure that Session 8 is selected as one of the *Input* ports and one of the *Output* ports. This allows Cakewalk to receive automation data from Session 8.
- For playback, make sure that individual track outputs are assigned to "Session 8".
- Make sure your MIDI output channel setting on the track you're recording matches Session 8's MIDI channel setting (in the *Automation* dialog).

Configuring Passport Designs' PRO 4

PRO 4's MIDI and synchronization settings can be found in the *Goodies* menu under the *MIDI Setup* command.

- From the Goodies menu, choose *MIDI Setup*.
- Assign Session 8 as either *Port A* or *Port B*..
- For playback, make sure track outputs correspond to the port you choose (A or B).
- Make sure your MIDI output channel setting on the track you're recording matches Session 8's MIDI channel setting (in the *Automation* dialog).
- Select Session 8 as the Record Port.

Final Stereo Mixdown Using Internal Mix Mode

The last step in a recording project is generally the mastering process. During mastering, a final stereo mixdown of the recording is created. This stereo version is the "master," from which all subsequent copies will be made. For this reason, the master must be the best possible copy of the final mix.

There are some planning steps you will need to take before creating a digital master. If your Session includes MIDI instruments playing back from a sequencer and you are planning to use Internal Mix Mode, the MIDI tracks will obviously not be included in your mix unless you bring them into Session 8's mixer. The easiest way to do this is to simply connect them to inputs of the Audio Interface. By doing so, these additional instruments will be audible through the Input/Return faders. By triggering playback of your sequencer and mixing these instruments "live" with your other finished Session 8 tracks, you will have a comprehensive mix of audio and MIDI without ever having to use precious hard disk space for your MIDI tracks.

To bring MIDI or other live instruments into your final mix:

- Connect your instruments to the appropriate inputs of the Audio Interface.
- While watching the meters on the Input/Return channels, adjust your instrument's output levels.

- Play your Session 8 tracks once through to check their levels against the live instruments' levels before you begin mastering. If you are playing MIDI instruments with a sequencer, start playback of Session 8 and the sequencer, and adjust final levels.
- You're now ready to record your final mix to your mastering deck.

Recording Your Final Mix on an External Recorder

Session 8 allows you to master the current Session to either an external analog tape deck or digitally, direct to any S/PDIF-equipped digital recorder such as a DAT deck. The procedure is basically the same for both.

Session 8's digital output is always turned on (digital *input* is not). This means that you always have digital outputs 1 and 2 running, even when analog outputs 1 and 2 are in use. The fact that digital output is always available can be very useful, since it allows you to mix to both analog and digital recorders simultaneously, if you wish.

To record your final mix on a DAT recorder digitally:

- If you are mixing to a DAT recorder or other digital device that accepts a S/PDIF format digital signal, connect it to the S/PDIF jacks on the back of the Audio Interface. Set the device's digital input format to S/PDIF.
- You can monitor your mix via the Audio Interface's analog stereo mix outputs (1 and 2) .
- Make sure that your Session is set to its beginning.
- Press *Record* on your recorder to begin recording.
- Start playback of your Session 8 Session.
- Adjust the Mix during playback with the mouse and on-screen faders or a MIDI fader controller, or use Mix automation via a MIDI sequencer.

When your Session has finished playing, stop your external recording deck. You now have a digital master mixdown of your Session.

To record your final mix on an analog recorder:

- If you are mastering to an analog device such as a cassette deck, connect it to the main stereo outputs on the back of the Audio Interface.
- You can monitor your mix via the analog stereo line outputs of your analog mixdown deck.
- Make sure that your Session is set to its beginning.
- Press *Record* on your recorder to begin recording.
- Start playback of your Session 8 Session.
- Adjust the Mix during playback, or use Mix automation via a MIDI sequencer.

When your Session has finished playing, stop your external recording deck. You now have an analog master mixdown of your Session.

Some Things to be Aware of When Mastering Digitally

Although digital audio is more robust than analog audio in many ways, there are a couple of things which you should always bear in mind when you are embarking on a project:

Using Audio Compression
Although audio compression is often indispensable in the analog recording world, it can present problems in the digital realm. If you compress an input signal at a very high ratio, you will create a signal that contains much higher overall power compared to its transients. By recording a number of such signals as hot as possible on multiple tracks, you create a scenario that is more likely to clip the mixed output signal. This can occur because these high-power compressed signals, when superimposed on one another, create an extremely high-powered output. This output often may go above the 100% amplitude level possible with 16 bits, resulting in clipping. To remedy this potential problem (especially in cases where multiple broadband tracks are compressed), use just enough compression to get the job done.

Mastering to Error-correcting Media
When you are mastering digital audio, you should also remember that there is a difference between different digital mastering media. True *random-access* media (such as hard disks, erasable optical cartridges, Bernoulli cartridges, WORM drives etc.) guarantee

better data integrity than most *sequential* digital media (audio DAT recorders, for example). Most sequential digital media use error correction schemes to fix the occasional chunk of bad data that is received. These "corrections" represent deviations from the actual data that should be recorded, and the more often you transfer (make digital copies) between error-correcting devices, the more likely it is that these deviations will accumulate. Although these deviations manifest themselves in an extremely subtle (and often inaudible) fashion, you must still think of them as "digital generation loss" artifacts. You can avoid these potential problems by avoiding "copies of copies" of your master mix by not duplicating DAT tapes, and instead mastering directly from Session 8 to DAT each time you want to make an additional copy of your master mix. And get in the habit of archiving the master mixdown of your Session on a random-access medium such as optical cartridge so that you will always have a master copy with full data integrity stored safely away.

- From the *File* menu, choose the *Move Soundfiles to...* command. A *Select Directory* dialog will appear. Select or create an empty directory. All Soundfiles *in use* in the current Session will be moved to this directory.
- Save your Session, and exit Session 8.
- Using the Windows File Manager, delete the remaining Soundfiles (*.WAV), parameter (*.PRM) and crossfade (*.XFD) files from the original directory. Don't delete the files in the directory you chose for the *Move Soundfiles* command! See page 261 for cautionary notes about deleting Soundfiles!

  Also, don't delete your .SES session file, as the *Move Soundfiles* command won't move the Session file. By default, Session files are stored on your PC's internal hard drive, so this normally won't be a problem.
- Restart Session 8, open your Session, and use the *Move Soundfiles...* command again to move the Soundfiles, parameters and crossfades back to their original directory.
- Save the Session.

If you have more than one Session "in-progress" on your drive, you'll need to *Move Soundfiles...* from each Session to the temporary drive, one at a time, before you delete any Soundfiles. Failure to move each Session's files individually following this procedure will result in the loss of audio from those Sessions!

Backing up and Restoring Sessions with a DAT Recorder

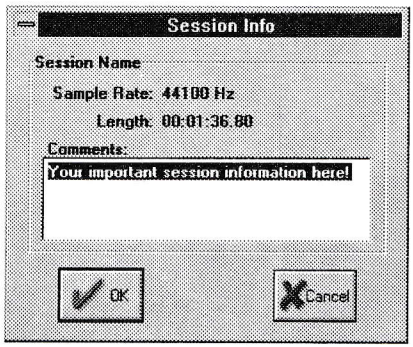
Session 8 allows you to both save and restore audio files and session information to standard DAT cassettes, using the *Save to DAT* and *Load from DAT* commands in the File menu. This feature conveniently allows you to "archive" your entire session onto DAT so that you can reuse your hard disk for other sessions. Both audio and session data (including region definitions, mixer settings and more) are saved. When you need to reload the archived session to your hard disk at a later date, you can easily do so.

To use this feature, connect your DAT player to the digital in and outs of the Audio Interface. Session 8 will automatically set all other parameters such as sample rate, channel 1,2 input and Sync Mode for you.

If you are using the Digidesign ADAT® Interface, it is imperative that you set the Clock Source to "ANALOG INTERFACE" before proceeding.

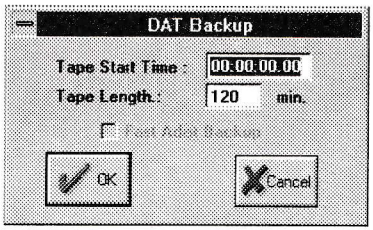
To save a session to DAT:

- Open the Session you wish to save.
- From the *File* menu, choose Get Info. Any notes you place here will be displayed at the beginning of the restore process, so you may want to leave a note with some details about this Session. This step is optional, but recommended.

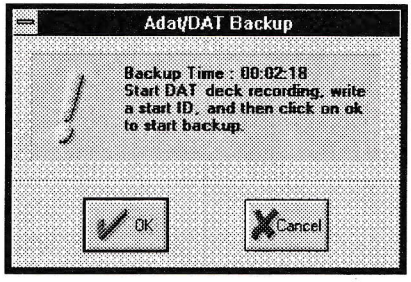


The Get Info dialog

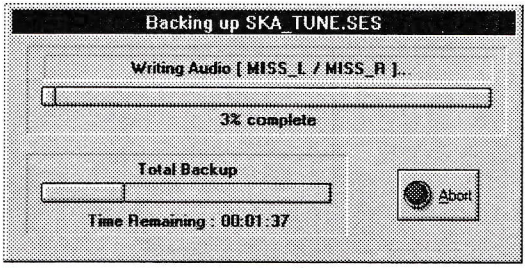
- Choose the *Save to DAT* command. The following dialog will appear



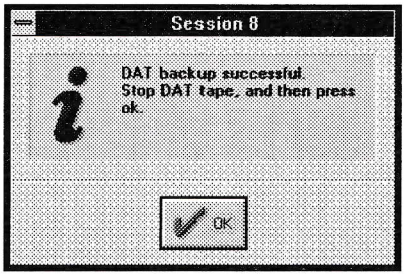
- Enter the length of the inserted DAT tape and current time on the DAT. If you're starting from the beginning of the tape, leave the start time set to 00:00:00.00. Session 8 will keep track of the time remaining on the tape during the backup process. If the tape is going to run out, Session 8 will pause and ask you to put a new tape in.
- Click OK. The following dialog will appear:


Adat/DAT Backup
Backup Time : 00:02:18
Start DAT deck recording, write a start ID, and then click on ok to start backup.
OK
Cancel

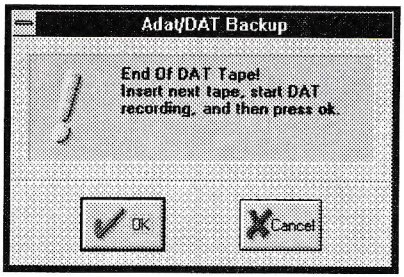
- Start the DAT deck recording and write a start ID on your DAT tape with the deck.
- After you have written a Start ID, click *OK* in Session 8's *ADAT/DAT Backup* dialog to begin recording the session to your DAT deck. A status dialog will be updated as the backup progresses.



- When Session 8 has finished saving your session to DAT, it will alert you with the dialog shown below. At this point, stop the DAT deck and click *OK* in the dialog.



If the DAT is not long enough to back up the entire Session, the following dialog will appear:

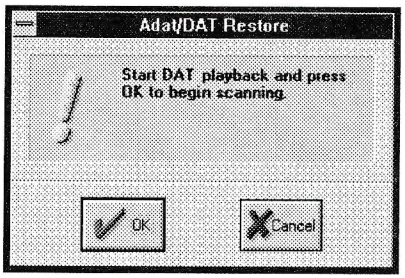


- Change DATs, start recording and press OK.

You can keep more than one session on a single DAT tape if you like, as long as you are careful not to record one session over the other.

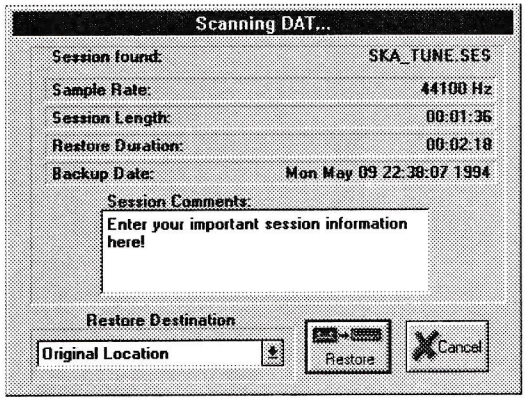
To load a previously saved session into Session 8 from DAT:

- Choose the *Load from DAT* command. This dialog appears:



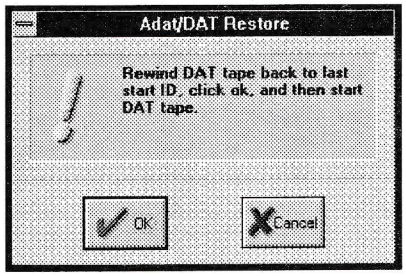
The Load from DAT dialog

- Play back the DAT tape containing your backed up Session and click *OK* in the dialog. A second dialog displaying information about the session appears.

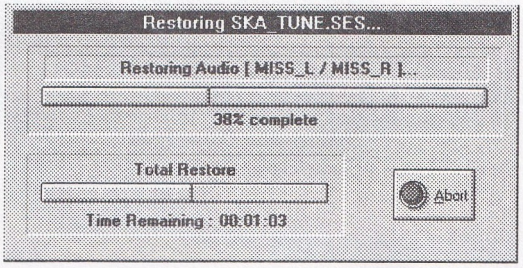


When you restore a session from DAT this dialog appears, providing information about the session including any session comments you previously entered in the Get Info dialog

- If the "session found" isn't project you want to restore, you may fast forward or rewind the DAT, or even change tapes. Session 8 will continue to scan whatever DAT is being played. When it finds a new backup, it will display its information.
- When the "Session found" is the one you want, click the *Restore* button.



- Follow the instructions and Click OK. Restoration will begin, and the status box below will appear:



You will see this dialog as Session 8 begins loading a session from DAT

- All session files will be restored to their original locations unless you choose a different destination (described below).

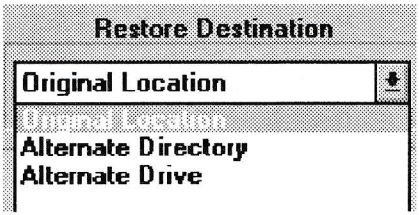
The Restore Destination Menu

In the lower left of the *Scanning DAT* dialog, there is a drop down menu containing three restore destination options. The default setting is *Original Location,* meaning the disk locations of all the files in the session you are restoring before they were backed up to ADAT. The other two options are:

- *Alternate Directory*. When you choose this option, you will be prompted for a directory name when you begin the restore. You must choose an existing directory on the same disk drive where the session audio files were originally located. All files associated with the session, including the *Session* file, will be restored to this directory.
- *Alternate Drive*. When you choose this option, you will be prompted to select from a list of SCSI drives connected to your Session 8 SCSI/DSP card. All files associated with the session will be restored to this drive in directories that match their original directory locations.

To change the restore destination:

- Click on the arrow to the right of the *Restore Destination* field. A menu drops down.



Choosing the restore destination

- Click on *Alternate Drive* or *Alternate Directory*. Your choice will be displayed in the field.

Backup and Archiving Alternatives

Recording audio to your hard disk will use a considerable amount of disk space—approximately 40 megabytes per minute of linear eight track audio. For this reason it is a good idea to have some type of archiving medium for keeping master and backup copies of your recordings. Below are some devices that are very useful for archiving purposes.

IMPORTANT

Many backup computer peripherals are SCSI devices. However, Session 8's SCSI port will not support removable media systems (and backup devices all use removable media). This means adding one of the computer peripherals suggested below will mean adding a second SCSI or similar interface card to your PC.

Erasable Optical Drives: These drives store 600 megabytes (or more) on a two-sided 5 1/4" removable cartridge (300 megabytes per side). Since the medium is magneto-optical (a combination of magnetics and laser technology), the cartridges have few moving parts and a relatively long storage life. Unfortunately they are not yet fast enough for eight track recording, and are only useful as an archiving medium.

Removable Platter Drives: These drives store 44 or 88 megabytes on a removable magnetic platter cartridge. Although most implementations of the mechanism are fast enough for four track recording and playback, some are not. Generally speaking, 44 and 88 megabyte removable drives are of limited use as a recording or archiving medium, because they hold only about 1 or 2 minutes (respectively) of eight track audio recorded at a 44.1 kHz sampling rate.

WORM Drives: WORM drives can record data once. They are extremely high-capacity (900 megabytes or more), but they cannot be erased or rewritten. They have a very long storage life, and are useful as a long-lasting master archive. They are not fast enough for eight track recording or playback.

Streaming Tape Drives: Streaming tape drives are generally the least expensive data backup devices, and because they use verification schemes, they guarantee file integrity. They store data on magnetic cassettes (DAT, 8mm or otherwise) in sequential fashion, so they tend to be very slow, but the media costs are minimal. Because the storage medium is magnetic, the storage life may be limited – but no more so than traditional magnetic audio tape. In many ways, the combination of a large, fast hard disk for recording and mastering, and a DAT backup drive (a WangDAT drive, for example) for archiving may be the best price-for-performance combination.

DAT Recording Decks: While digital audio recording decks are a reasonable and cost-effective archiving alternative for your Session 8 audio files, they do have some drawbacks—transfers made via digital audio are not verified, meaning an error or dropout in the backup tape could go undetected until you try to restore it, which could be tool late. Also, remember that they use error-correction schemes, so you may encounter generation loss in your digital audio. Generally speaking, digital mixing/transfer to standard DAT recorders is best reserved for use as a client (or mastering) delivery medium.

On the other hand, DAT recorder backup has some advantages. First, any audio backed up digitally to a DAT recorder can be played back two tracks at a time and auditioned as normal audio. Second, no second SCSI or other interface card is required. Third, Session 8 includes very sophisticated DAT backup and restore procedures, which were explained in the previous section.

The backup method you choose should be weighed by how much you are willing to spend, versus how much time you want to devote to saving and restoring files. Chances are you already own a DAT recorder with digital I/O, so you can at least use that while evaluating your long-term backup needs.

If you have more questions about PC-compatible storage systems, we recommend that you check back issues of *PC Computing,* and *PC World,* and other PC-related magazines for in-depth reviews and comparisons.

ADAT Interface

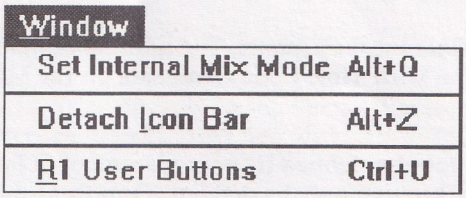
This command will only be available if you have purchased the optional ADAT interface. See the documentation that came with it for more information.

Save Settings...

Use this command to save any change you make to the settings in the Route window, as well as all window sizes and positions. Choosing this command will save any changes you have made to the *Preferences, MIDI* or *Setup* dialog boxes and any *Learned* MIDI controller assignments. If you have no unsaved changes, this command will not be available.

NOTE: If you have unsaved changes in an Option dialog when you Exit Session 8, you will be offered an opportunity to save them at that time.

Window Menu



The commands in this menu control window display options.

Set Internal Mix Mode/Set External Mix Mode

Set Internal Mix Mode/Set External Mix Mode toggles between these two Session 8 output modes. The name of this command changes each time it is used. If *External Mix mode* is active, the command will read *Set Internal Mix Mode,* and vice versa. Details of *External* and *Internal Mix modes* are provided in Chapter C of this manual.

Detach Icon Bar/Attach Icon Bar

Detach Icon Bar/Attach Icon Bar changes the placement of the transport/icon bar. When attached, it is in a fixed position below the Session 8 pull-down menu area. When

SESSION 8

USER'S GUIDE

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1360 WILLOW ROAD
MENLO PARK • CA • 94025
932501901A
NEARSIDE
16.37
14.19
8.56
0.167 TYP
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